15" TFT LCD Colour Monitor

HUDSON 3

Service
Service
Service

150S4FG/00(Hannstar)

Service Manual

Horizontal frequencies
30 - 61 kHz

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SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

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Important Safety Notice

Proper service and repair is important to the safe, reliable operation of all Philips Consumer Electronics Company** Equipment. The service procedures recommended by Philips and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Philips could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Philips has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by Philips must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

** Hereafter throughout this manual, Philips Consumer Electronics Company will be referred to as Philips.

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line*
(where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from Philips. Philips assumes no liability, express or implied, arising out of any unauthorized modification of design.
Servicer assumes all liability.

* *Broken Line* ▬ ▪ ▬ ▪ ▬ ▪

FOR PRODUCTS CONTAINING LASER :

DANGER- Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

CAUTION- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION- The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

Take care during handling the LCD module with backlight unit

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person s body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a soft material. (Cleaning with a dirty or rough cloth may damage the panel.)

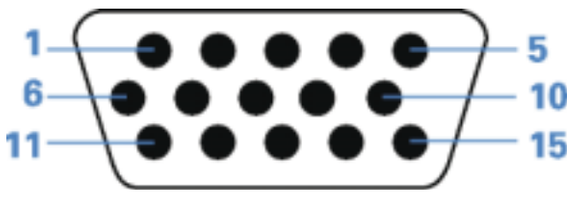
Technical Data

Technical Specifications

LCD Panel	
Screen type	: Hanstar - TFT LCD
Screen dimensions	: 15 inches (diagnoal)
Effective viewing area	: 304.1 X 228.1 mm(15.0 inches)
Pixel pitch	: 0.297 x 0.297 mm
Display Colors	: 8 bits with dithering (16M colors)
SCANNING	
Horizontal scan range	: 30 kHz to 61 kHz (automatic)
Vertical scan range	: 56 Hz to 76 Hz (automatic)
Optimal preset resolution	: 1024 x 768 at 60 Hz
Highest preset resolution	: 1024 x 768 at 75 Hz
Video	
Video dot rate	: 80MHz
input impedance	
-Video	: 75 ohms
-Sync	: 2 KOhm
Input signal levels	: 700m Vpp
Synchronization input signals	: Separate horizontal and vertical / composite ;TTL level, positive or negative, Sync On Green
Input Frequency	: XGA Hsync 48-61 KHz,Vsync 60-76Hz(N.I.) SVGA Hsync 35-50 KHz,Vsync 56-75Hz(N.I.) VGA Hsync 31-38 KHz,Vsync 60-76Hz(N.I.)
Video interface	: Analog(D-Sub)
Resolution and Preset Modes	
Maximum	: 1024 x 768 at 75Hz
Recommended	: 1024 x 768 at 60Hz
Optical Characteristics	
Contrast ratio	: 400(typ.)
Brightness	: 250 cd/m^2 (typ.)
Peak contrast angle	: 6 o· clock
White chromacity	: x:0.283 y:0.297 (at 9300°k) x:0.313 y:0.329 (at 6500°k)
Viewing angle (CR>5)	: Upper>=50° (typ.)Lower>=60°(type) Left and Right >=75° (typ.)
Response time	: <=30ms(typ.)
Physical Characteristics	
Dimensions(WXHXD)	:343x310x170mm(incl.pedestal)
Weight (monitor only)	: 3.7 kg
Tilt Forward / Backward	: -5° / 25°
AC input voltage / frequency	: 90 to 240 VAC / 50 or 60 Hz
Power consumption	: 23 W (typ.)
Temperature (Operating)	: 5°C to 40°C
Relative Humidity	: 20% to 80%
System MTBF	: 50K Hrs(CCFL 30Khrs)

Pin Assignment

1. The 15-pin D-sub connector (male) of the signal cable



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	DDC+5V
2	Green video input	10	Logic ground
3	Blue video input	11	Identical output connected to pin 10
4	Identical output connected to pin 10	12	Serial data line (SDA)
5	Cable detect	13	H. Sync / H+V
6	Red video ground	14	V. Sync
7	Green video ground	15	Data clock line (SCL)
8	Blue video ground		

Technical Data

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Automatic Power Saving

If you have VESA's DPMS compliance display card or software installed in your PC, the monitor can automatically reduce power consumption when power saving function active. And if an input from keyboard, mouse or other input devices is detected, the monitor will automatically "wake up". The following table shows the power consumption and signaling of this automatic power saving feature :

Power Management Definition					
VESA's mode	VIDEO	H-SYNC	V-SYNC	POWER USED	LED COLOR
ON	Active	Yes	Yes	< 30 W	Green
OFF	Blanked	No	Yes	< 1 W	Amber

This monitor is Environmental Protection Agency (EPA) Energy Star compliant and TCO'99 power management compatible.
*Zero power consumption in OFF mode can only be achieved by disconnecting the mains cable from the monitor.

ENERGY STAR© is a U.S. registered mark. AS AN ENERGY STAR PARTNER, PHILIPS HAS DETERMINED THAT THIS PRODUCT MEETS THE ENERGY STAR GUIDELINES FOR ENERGY EFFICIENCY.

Data Storage

Factory preset mode:

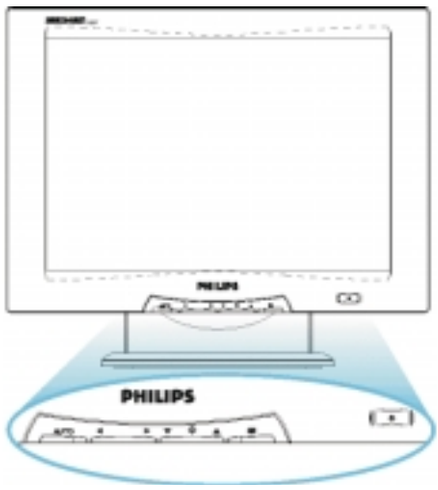
This monitor has 14 factory-preset modes as indicated in the following table :

Mode	Resolution	H. freq. / V. freq	Standard
1.	640 x 350	31.469Khz/70.087Hz	VGA
2.	720 x 400	31.469Khz/70.087Hz	VGA
3.	640 x 480	31.469Khz/59.940Hz	VGA
4.	640 x 480	35.000Khz/66.667Hz	Macintosh
5.	640 x 480	37.861Khz/72.809Hz	VESA
6.	640 x 480	37.500Khz/75.000Hz	VESA
7.	800 x 600	35.156Khz/56.250Hz	VESA
8.	800 x 600	37.879Khz/60.317Hz	VESA
9.	800 x 600	48.077Khz/72.188Hz	VESA
10.	800 x 600	46.875Khz/75.000Hz	VESA
11.	832 x 624	49.700Khz/75.000Hz	Macintosh
12.	1024 x 768	48.363Khz/60.004Hz	VESA
13.	1024 x 768	56.476Khz/70.069Hz	VESA
14.	1024 x 768	60.023Khz/75.029Hz	VESA

Meanwhile, it also reverse 14 sets data space available for user storage new timings data.

Connection to PC

Front View



UP and DOWN buttons are used when adjusting the OSD of your monitor

LEFT and RIGHT buttons, like the UP and DOWN buttons, are also used in adjusting the OSD of your monitor.

BRIGHTNESS hotkey. When the UP and DOWN arrow buttons are pressed, the adjustment controls for the BRIGHTNESS will show up.

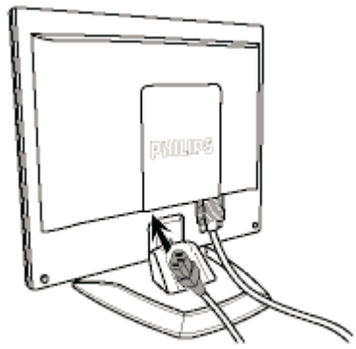
OK button which when pressed will take you to the OSD controls.

POWER button switches your monitor on.

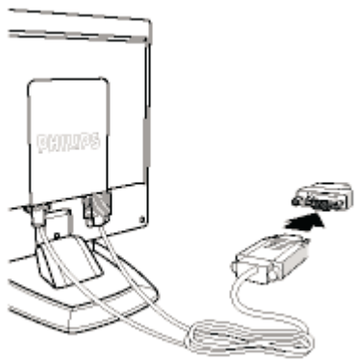
AUTO Automatically adjust the horizontal position, vertical position, phase and clock setting.

Please follow the steps to connect your LCD Monitor to PC.

1) Plug the power cord into monitor firmly



Note:
If you use an Apple Macintosh, you need to connect the special Mac adapter To one end of the monitor signal cable



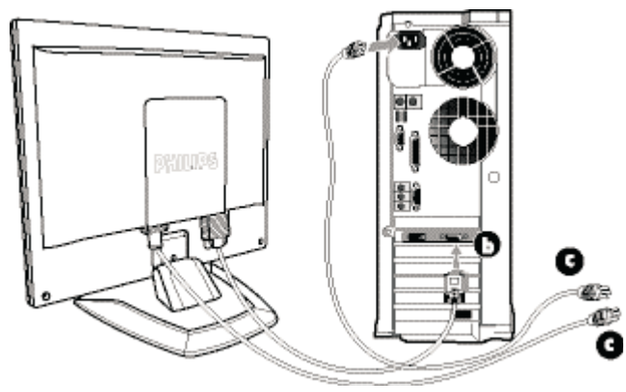
2) Connect to PC

(a) Turn off your computer and unplug its power cable.

(b) Connect the monitor signal cable to the video connector on the back of your computer.

(c) Plug the power cord of your computer and your monitor into a nearby outlet.

(d) Turn on your computer and monitor. If the monitor displays an image,



Installation & Accessories

Installation Locations

Avoid Heat and Extreme Cold

1. Do not store or use the LCD monitor in locations exposed to heat, direct sunlight, or extreme cold.
2. Avoid moving the LCD monitor between locations with large temperature differences. Choose a site falling within the following temperature and humidity ranges.
   Temperature: 5-40° C 41-104°F
   Humidity: 20-80% RH
3. Do not subject the LCD monitor to severe vibration or high impact conditions. Do not place the LCD monitor inside a car trunk.
4. Take care not to mishandle this product by either knocking or dropping during operation or transportation.
5. Do not store or use the LCD monitor in locations exposed to high humidity or a dusty environment. Also do not allow water or other liquids to spill on or into the LCD monitor

Correct handling of the monitor

1. When handling the monitor, grip the bottom firmly with both hands and ensure that the front panel faces outward before lifting. Please refer to the diagram on the up.
2. Handling the monitor with care prevents scratching and damage. If the monitor becomes damaged, immediately disconnect the power from the unit and have it checked by a qualified service person before using it again.
3. To prevent fire or electrical shock, do not drop the monitor.
4. When moving the monitor, be sure to unplug all power cords in order to avoid injury or damage to the equipment.

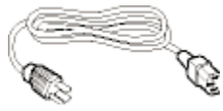
Accessory Pack

Unpack all the parts.

1) Audio in Cable (Option only available for Multimedia version) (Color lime)

2) Microphone out Cable (Option only available for Multimedia version)(color pink)

3) Power Cable (socket may differ for different countries)



4) Macintosh Adapter (optional)

5) VGA Signal Cable

6) E-DFU package with Quick Setup Guide, Using Your Monitor Manual, and CD-ROM.

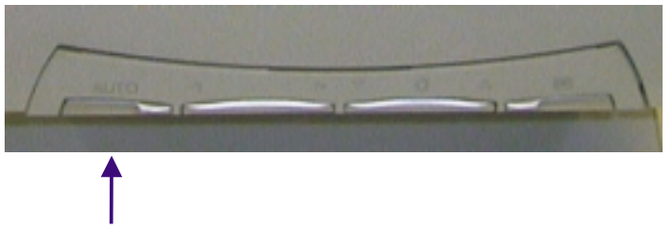
7) Pivot CD-ROM (optional)

CLOCK & PHASE Adjustments

Due to the different quality of video signal generated from graphics cards. It is necessary to adjust CLOCK and PHASE functions for the optimal video display of LCD monitor. Following steps will guide you to make correct adjustment of CLOCK and PHASE.

However, CLOCK and PHASE functions are only available while analog video signal is supplied. Operating unit under digital signal state, the video clock information can be obtained from graphics cards directly. Therefor, it is unnecessary to adjust these functions

Auto adjustment hotkey



The 150S4 has build-in a auto adjustment hotkey on the front panel, you may obtained a optimal video display by simply press the button and save the settings. CLOCK, PHASE, Vertical position, and Horizontal position are adjusted automatically.

Manual adjustment

If the quality of display still poor or flicker, you may also improve it by manual adjust CLOCK and PHASE functions to eliminate the flicker.

Step 1 : Click on the Start button (Win95, Win98 or Win NT) and choose " Shut Down...". as shown in Fig.1

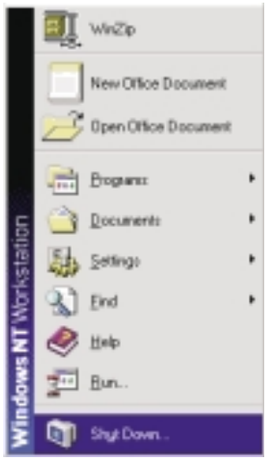


Fig.1

Step 2 : The menu of " Shut Down Windows " is as shown in Fig. 2

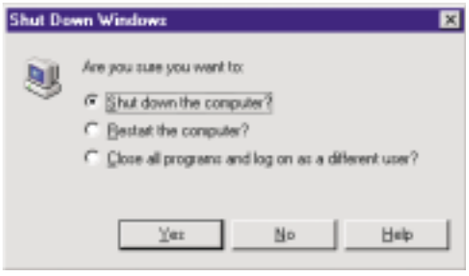
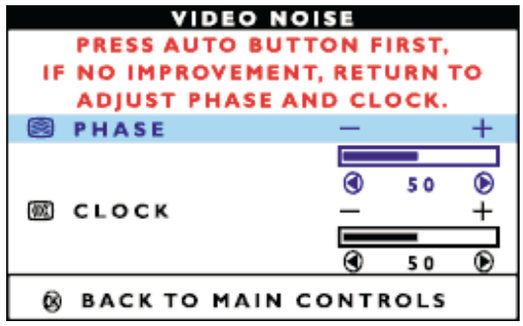


Fig. 2

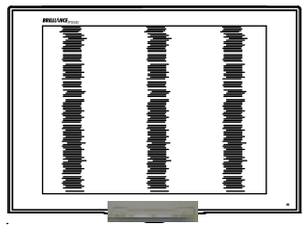
Step 3 : Remaining Shut Down Window on the screen , follow The CLOCK and PHASE adjustment instructions for the optimal video display.

Step 4 : Press the button to bring up OSD menu.

Step 5 : Select VIDEO NOISE by press button.
Step 6 : Press for bring up it s submenu.

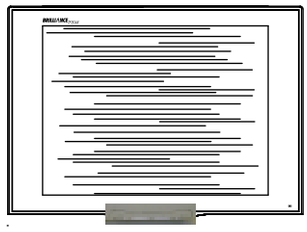


Step 7 : Press or to adjust CLOCK. The picture will be jitter as following figure, adjust CLOCK to fine-ture the video until optimal display is obtained.



CLOCK Phenomenon

Step 8 : Press or to adjust PHASE. The picture will be jitter as following figure, adjust PHASE and check the picture, stop at the point that without any vertical jitter bar remaining on the screen.



PHASE phenomenon

Step 9 : Quit OSD menu by press button to save the settings.

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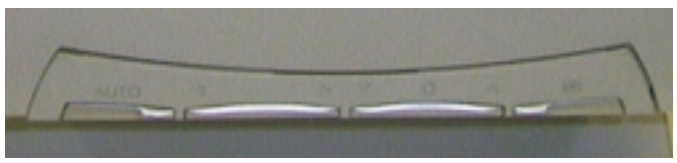
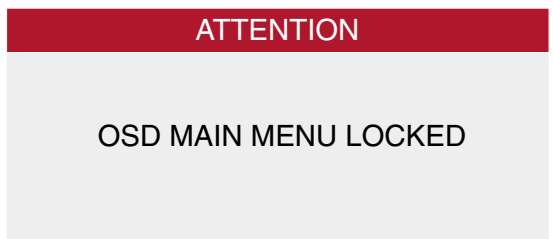
Advanced control of OSD

Front control panel

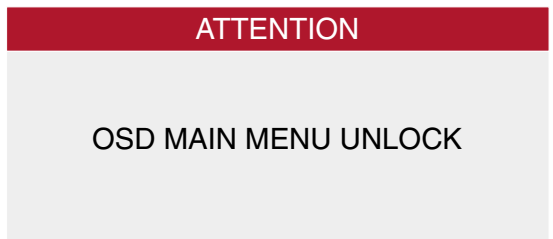


To Lock/Unlock OSD function

The OSD function can be locked by pressing button for more than 10 seconds, the screen shows following windows for 3 seconds.
In this condition, The & (brightness) , & hotkey are not functional for brightness expectively while OSD locked

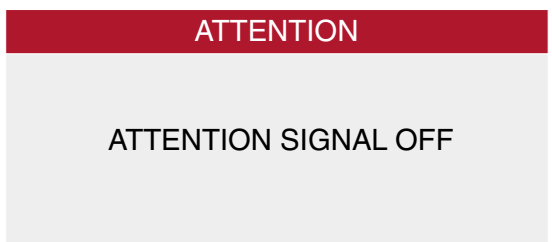


Locked OSD function can be released by pressing button for more than 10 seconds. While press button for OSD unlocked purpose, the screen will keep showing"OSD MAIN MENU LOCKED" until OSD function unlocked and screen automatically shows following window for 3 seconds.

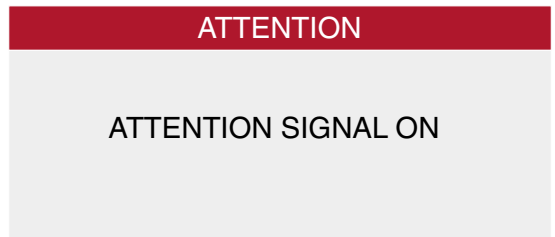


Switch ON/OFF attention signals

All attention signals can be switched off by keep pressing button for more than 10 seconds if there is no video signal supplied.
Remark: Power light is amber color.



Recover attention signals by pressing button for more than 10 seconds without video signal input.
Remark : Power light is amber color.



Access Factory Mode

To hold and buttons then power on the monitor. Press to bring up OSD menu for confirmation as below:

In the factory mode, once video signal removed, a full white pattern will be display on the screen as Fig.1 in stead of power saving mode. In other words, the power saving function will be disable in the factory mode.

Fig.1

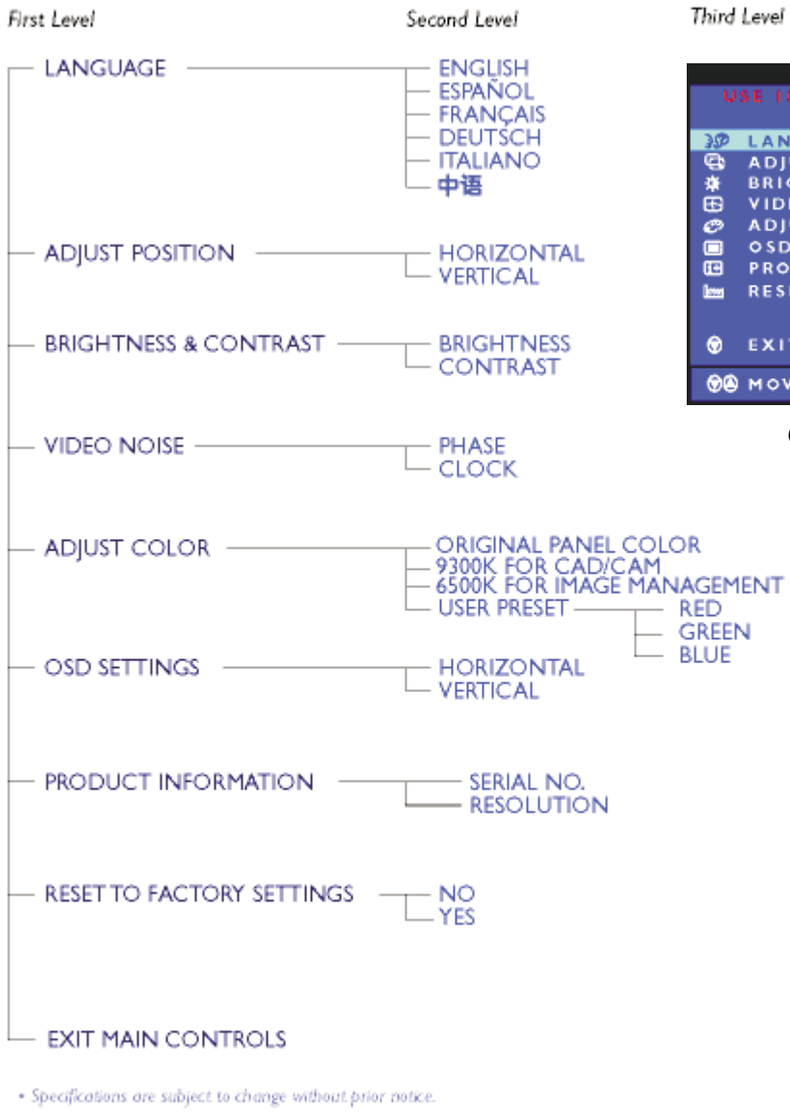
Leave factory mode by simply power off the monitor.

OSD Control Structure for Analog

The OSD Tree for analog video signal

Below is an overall view of the structure of the On-Screen Display. You can use this as reference when you want to later on work your way around the different adjustments.

First Level **Second Level**

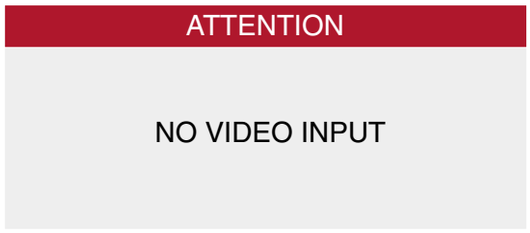


OSD Menu (Analog)

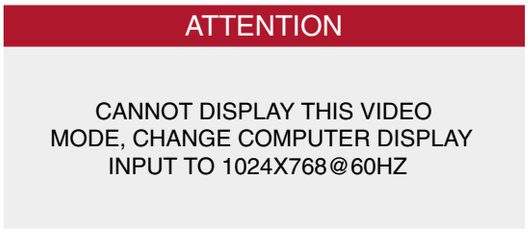
OSD Attention signals

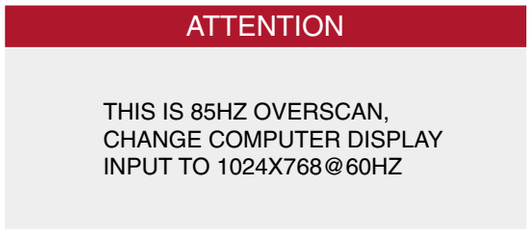
The monitor will detect various display situation automatically. When the monitor detects the problems, the screen will show the different warning signals to remind you what is happen to your monitor.

NO VIDEO INPUT
This screen appears if there is no video signal input. Please check that the signal cable is properly connected to the video card of PC and make sure PC is on.

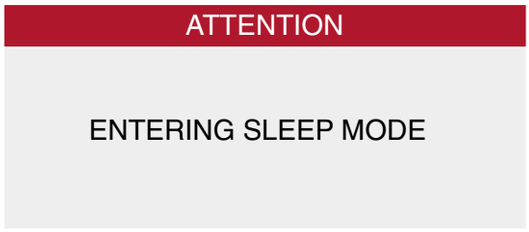


CANNOT DISPLAY THIS VIDEO MODE..
This screen warns when the input frequency from the computer is not a standard video mode or out of the monitor's scanning range. Please change the display mode of the operating software in the computer(i.e. Windows) to 1024 x 768@ 60Hz for best display results.



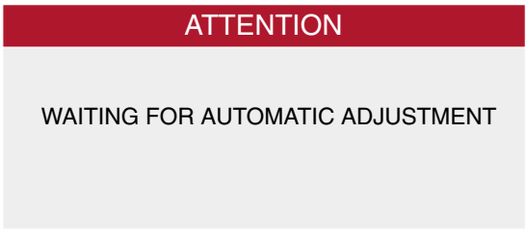


ENTERING SLEEP MODE
This screen appears when the monitor is about to enter the sleep mode. Please press any key on the keyboard or click the mouse to wake up the monitor and computer.

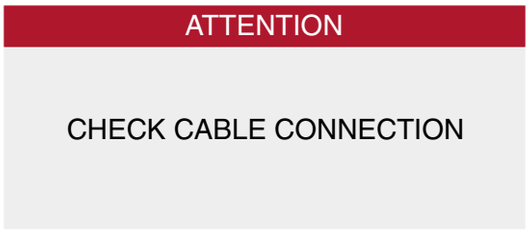


USE 1024 X 768 FOR BEST RESULT
This message appears at the top of the OSD window when the video mode input is not the recommended 1024x768. Other modes may result in some picture distortion. Please adjust the video mode to 1024x768 at 60Hz for best display quality.

WAIT FOR AUTOMATIC ADJUSTMENT
This screen appears when you touch the button. It will disappear when the monitor is properly adjusted.



CHECK CABLE CONNECTION
This message appears when a signal cable is disconnected while computer is working.



Trouble Shooting

TROUBLESHOOTING

This page presents problems that can be corrected by the user. If the problem still exists after these possible solutions, a further action has to be take by authorized technicians.

No Picture
(Power LED not lit)

- Make sure the Power cable is plugged to the wall and back of the monitor.
- Make sure the DC power cord has been attached to the DC jack.
- First, power button in front of the monitor should be in the OFF position, then press it to ON position again.

No Picture
(Power LED is Amber or Green in color)

- Make sure the computer is turned on.
- Make sure the signal cable is properly connected to your computer.
- Check to see if the monitor cable has bent pins.
- The Energy Saving Feature may be activated.

Screen says

- Make sure the monitor cable is properly connected to your computer.
- Check to see if the monitor cable has bent pins.
- Make sure the computer is turned on.

AUTO button not working properly

- The Auto Function is designed for use on standard Macintosh or
- IBM-compatible PC running Microsoft Windows. It may not work properly if using non-standard PCs or video card.

Display position is incorrect

Push the AUTO button.

- Adjust the image position using the Horizontal
- Position & / or Vertical Position in the Second Window.

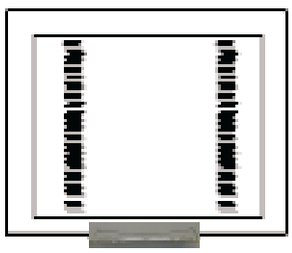
Image vibrates on the screen

Check that the signal cable is properly

- connected to the graphics board or PC.

Vertical flicker appears

- Push the AUTO button.
- Eliminate the vertical bars using the Clock Adjustment in the FIRST Window.



Horizontal flicker appears

- Push the Auto button.
- Eliminate the horizontal bars using the Phase Adjustment in the First Window.

The screen is too bright or too dark

- Adjust the contrast and brightness using the First Window.
(The backlight of the LCD monitor has a fixed life span. When the screen becomes dark or begins to flicker,please contact your dealer.)

An after-image appears

- If an image remains in the screen for an extended period of time,it may be imprinted in the screen and leave an after-image. This usually disappears after a few hours.

An after-image remains after the power has been turned off

- This is characteristic of liquid crystal and is not caused by a malfunction or deterioration of the liquid crystal. The after-image will disappear after a set amount of time.

Green, red, blue, dark and white dots remain on the screen

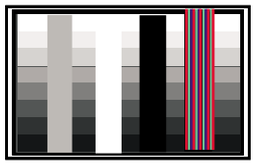
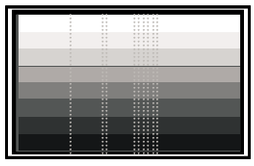
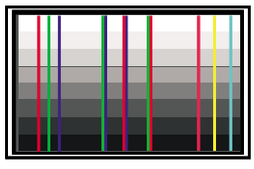
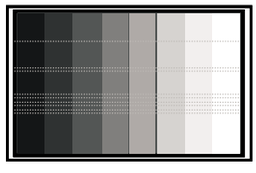
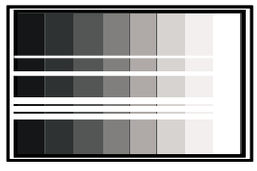
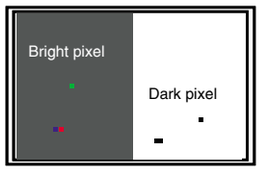
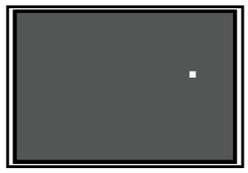
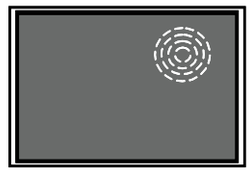
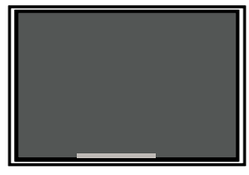
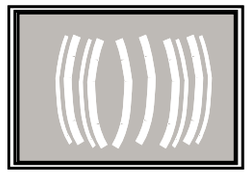
- The remaining dots are normal characterictic of the liquid crystal used in today's technology.

Go to cover page

Failure Mode of LCD panel

Quick reference for failure mode of LCD panel

This page presents problems that could be made by LCD panel. It is not necessary to repair circuit board. Simply follow the Mechanical instruction o n this manual to eliminate failure by replace LCD panel or backlight tubes.

Failure description	Phenomenon
Vertical block defect	
Vertical dim lines	
Vertical lines defect (Always bright or dark)	
Horizontal block defect	
Horizontal dim lines	
Horizontal lines defect (Always bright or dark)	
Has bright or dark pixel	
Polarizer has bubbles	
Polarizer has bubbles	
Foreign material inside polarizer. It shows linear or dot shape.	
Concentric circle formed	
Bottom back light of LCD is brighter than normal	
Backlight un-uniformity	
Backlight has foreign material. Black or white color, linear or circular type	

Flat Panel Adjust (FP Adjust)

Fpadjust program

The Flat Panel Adjust (FPadjust) software helps you to find the best setting for your Philips LCD monitor. It allows you to adjust the image performance of LCD monitor, such as RESOLUTION, AUTO ADJUSTMENT, POSITION, CONTRAST, VIDEO CLOCK and VIDEO PHASE.

Note: Video clock and phase functions are only available for analog video signals.

Install and Run FPadjust

In "MS Windows 95/98" environment : For example
1. Insert CD-DFU(3138 117 04761) to your CD-ROM driver.
2. Run "E:\PC\FPADJUST\SETUP.EXE" as Fig. 1. (Replace E by the letter of your CD-ROM driver)

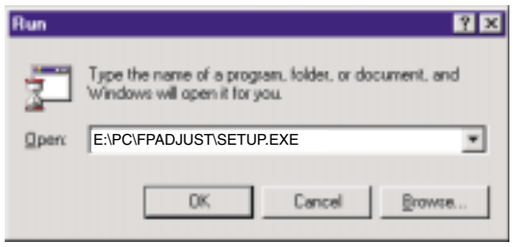
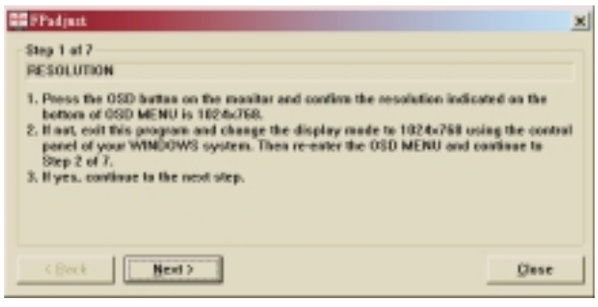


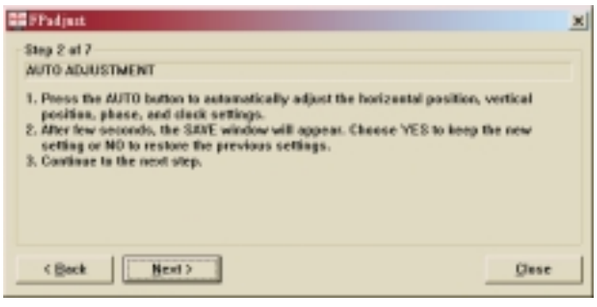
Fig. 1

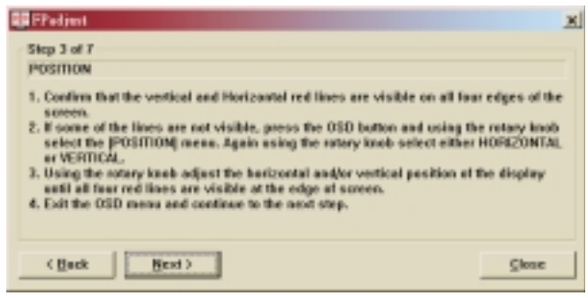
3. Then follow the instructions to install the FPadjust program.

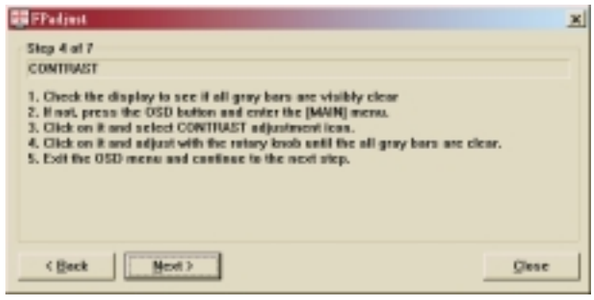
When finish, double click FPadjust icon " " , then the description (can be moved by mouse) and background pattern come on the screen for image adjustment.

FPadjust program is working as a pattern generator to provide the pattern display on the screen for the adjustment of CONTRAST, CLOCK, PHASE ...etc. Please follow the steps below to adjust your PHILIPS Flat Panel Monitor for best display quality.

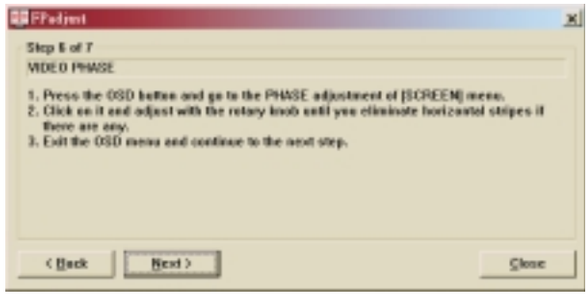

FPadjust
Step 1 of 7
RESOLUTION
1. Press the OSD button on the monitor and confirm the resolution indicated on the bottom of OSD MENU is 1024x768.
2. If not, exit this program and change the display mode to 1024x768 using the control panel of your WINDOWS system. Then re-enter the OSD MENU and continue to Step 2 of 7.
3. If yes, continue to the next step.
< Back
Next >
Close

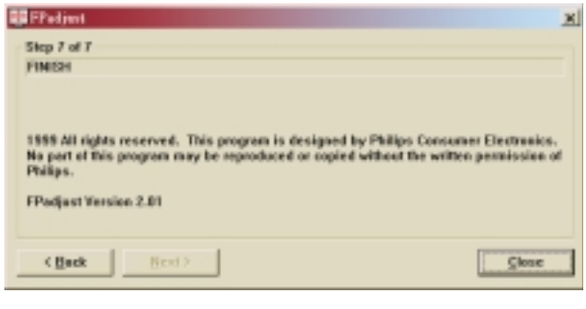

FPadjust
Step 2 of 7
AUTO ADJUSTMENT
1. Press the AUTO button to automatically adjust the horizontal position, vertical position, phase, and clock settings.
2. After few seconds, the SAVE window will appear. Choose YES to keep the new setting or NO to restore the previous settings.
3. Continue to the next step.
< Back
Next >
Close


FPadjust
Step 3 of 7
POSITION
1. Confirm that the vertical and Horizontal red lines are visible on all four edges of the screen.
2. If some of the lines are not visible, press the OSD button and using the rotary knob select the [POSITION] menu. Again using the rotary knob select either HORIZONTAL or VERTICAL.
3. Using the rotary knob adjust the horizontal and/or vertical position of the display until all four red lines are visible at the edge of screen.
4. Exit the OSD menu and continue to the next step.
< Back
Next >
Close


FPadjust
Step 4 of 7
CONTRAST
1. Check the display to see if all gray bars are visibly clear
2. If not, press the OSD button and enter the [MAIN] menu.
3. Click on it and select CONTRAST adjustment icon.
4. Click on it and adjust with the rotary knob until the all gray bars are clear.
5. Exit the OSD menu and continue to the next step.
< Back
Next >
Close

FPadjust
Step 5 of 7
VIDEO CLOCK
1. Press the OSD button on the monitor and go to the second OSD menu,[SCREEN].
2. Click on it and select CLOCK adjustment icon.
3. Click on it and adjust with the rotary knob to eliminate vertical stripes, if there are any.
4. Exit the OSD menu and continue to the next step.
< Back
Next >
Close


FPadjust
Step 6 of 7
VIDEO PHASE
1. Press the OSD button and go to the PHASE adjustment of [SCREEN] menu.
2. Click on it and adjust with the rotary knob until you eliminate horizontal stripes if there are any.
3. Exit the OSD menu and continue to the next step.
< Back
Next >
Close


FPadjust
Step 7 of 7
FINISH
1999 All rights reserved. This program is designed by Philips Consumer Electronics. No part of this program may be reproduced or copied without the written permission of Philips.
FPadjust Version 2.01
< Back
Next >
Close

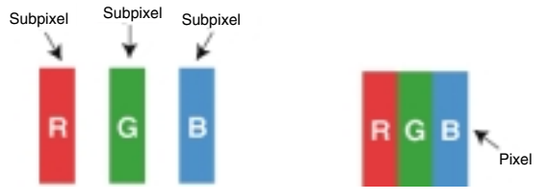
Definition of Pixel Defects

0. General

This section explains the different types of pixel defects and defines acceptable defect levels of each type. In order to qualify for repair or replacement under warranty, the number of pixel defects on a TFT LCD panel must exceed these acceptable levels.

1. Definition of Pixels and Subpixels

A pixel, or picture element , is composed of three subpixels in the primary colors of red, green and blue. Many pixels together from an image. When all subpixels of a pixel are lit, the three colored subpixels together appear as a single white pixel. When all are dark, the three colored subpixels together appear as a single black pixel. Other combinations of lit and dark subpixels appear as single pixels of other colors.



2. Types of Pixel Defects

Pixel and subpixel defects appear on the screen in different ways.

Bright dot defects
Bright dot defects appear as pixels or subpixels that are always lit or "on" . These are the types of bright dot defects:.

One lit red, green or blue subpixel

Two adjacent lit subpixels:
- Red + Blue = Purple
- Red + Green = Yellow
- Green + Blue = Cyan (Light Blue)

Three adjacent lit subpixels
(One white pixel)

Black dot defects
Black dot defects appear as pixels or subpixels that are always dark or "off" TThese are the types of black dot defects:

One dark subpixel

Two or three adjacent dark subpixels

3. Pixel Defect Tolerances

In order to qualify for repair or replacement due to pixel defects during the warranty period, a TFT LCD panel in a PHILIPS flat panel monitor must have pixel or subpixel defects exceeding the tolerances listed in the following tables.

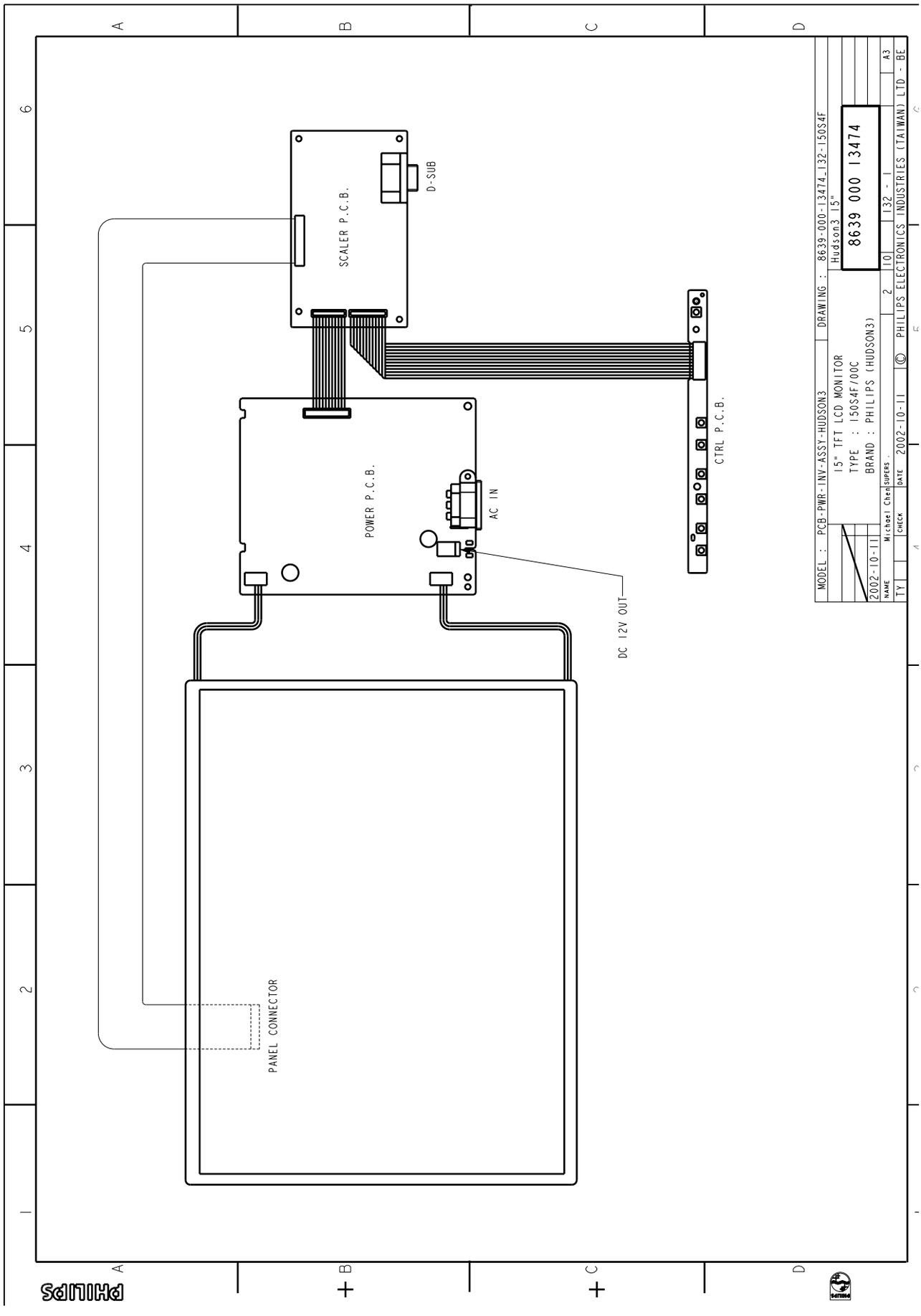
BRIGHT DOT DEFECTS	ACCEPTABLE LEVEL		
MODEL	**150P4**	**150B4**	**150S4**
1 lit subpixel	None	None	8 or fewer
2 adjacent lit subpixels	None	None	3 or fewer
3 adjacent lit subpixels (one white pixel)	None	None	1 or fewer
Distance between two bright dot defects*	None	None	15 mm or more
Bright dot defects within 20 mm circle	None	None	3 or fewer
Total bright dot defects of all types	None	None	8 or fewer

BLACK DOT DEFECTS	ACCEPTABLE LEVEL		
MODEL	**150P4**	**150B4**	**150S4**
1 dark subpixel	4 or fewer	4 or fewer	8 or fewer
2 adjacent dark subpixels	1 or fewer	1 or fewer	3 or fewer
3 adjacent dark subpixels	None	None	1 or fewer
Distance between two black dot defects*	15 mm or more	15 mm or more	15 mm or more
Black dot defects within 20 mm circle*	3 or fewer	3 or fewer	3 or fewer
Total black dot defects of all types	4 or fewer	4 or fewer	8 or fewer

TOTAL DOT DEFECTS	ACCEPTABLE LEVEL		
MODEL	**150P4**	**150B4**	**150S4**
Total bright or black dot defects of all types	4 or fewer	4 or fewer	10 or fewer

Note: 1 or 2 adjacent subpixel defects = 1 dot defect

Wiring Diagram



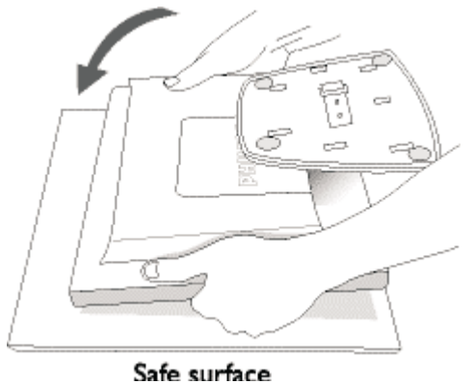
Mechanical instructions

General

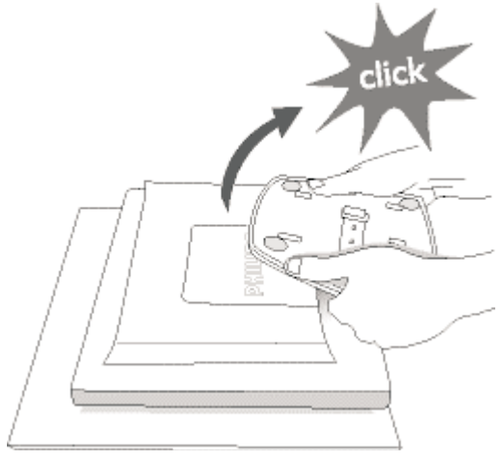
To be able to perform measurements and repairs on the circuit boards, Spread a soft mat underneath to avoid damaging the LCD surface.

Unfold base

1)Put monitor face down on the safety surface



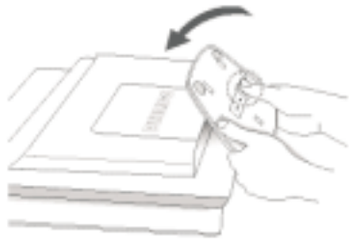
2) Pull up the base



Fold the base

1)Put monitor face down on the safety surface

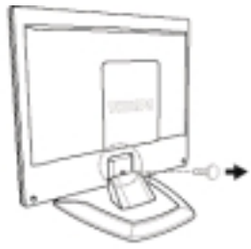
2)Push down the button and fold the base

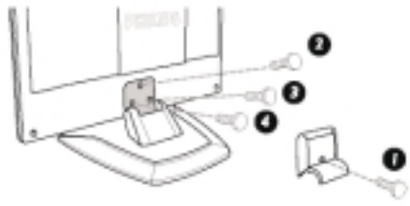


Remove the base Condition:

For VESA standard mounting applications
For optional bases replacement

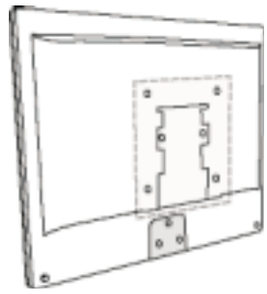
1) Remove the four screws and then remove the stand From the LCD monitor.





2) Remove the back cover.

Note: This monitor accepts a 100mmx100mm VESA-Compliant Mounting interface



Mechnical instructions

1. Back View as Fig.1
Remove screw on the cap of pedestal

Fig. 1

2. Remove Pedestal cap as Fig.2
There are 3 screws to fix between pedestal and back cover

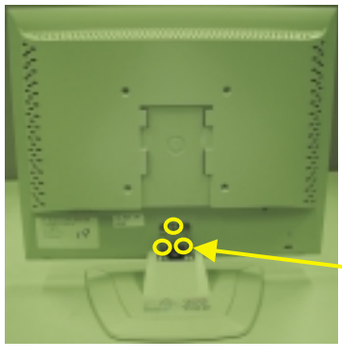


Fig.2

3. After removing Pedestal base as Fig.3

Fig. 3

4. Remove Bezel as Fig.4 ~ 7
   a. Open click on the left down side and right down side of bezel
   b. Open click on the right side and left side of bezel
   c. Open click on the left up side and right up side of bezel

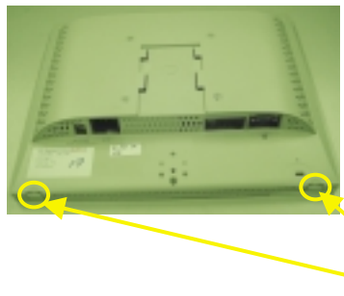


Fig. 4

Fig. 5

Fig. 6

Fig. 7

5. Remove back cover as Fig.8 ~ 10
   a. Control panel removal on the 1712 connector
   b. Open click on the right side of back cover
   c. Open click on the left side of back cover

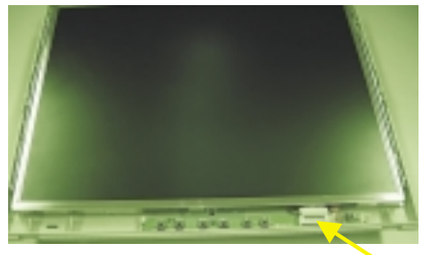


Fig. 8

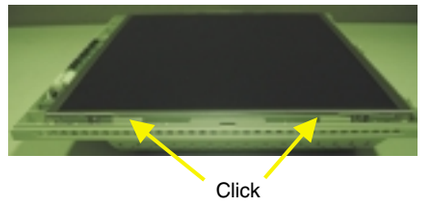


Fig. 9

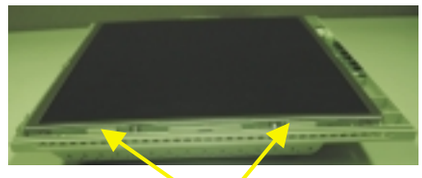


Fig. 10

Mechanical instructions

6. Remove back cover see Fig.11
6-1 scaler board
6-2 power + inverter board
6-3 remove 3 screws for replace scaler board
6-4 remove 3 screws for replace power + inverter board

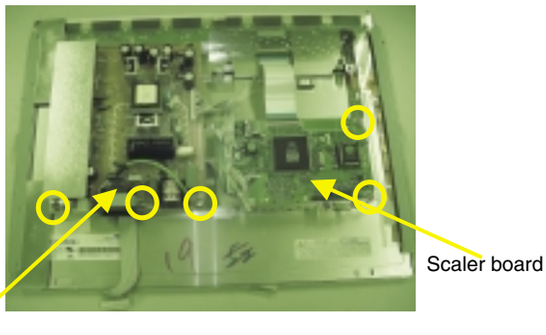


Fig. 11

7. Remove metal frame for replace LCD panel Fig.12
7-1 remove 2 screws on left side
7-2 remove 2 screws on right side

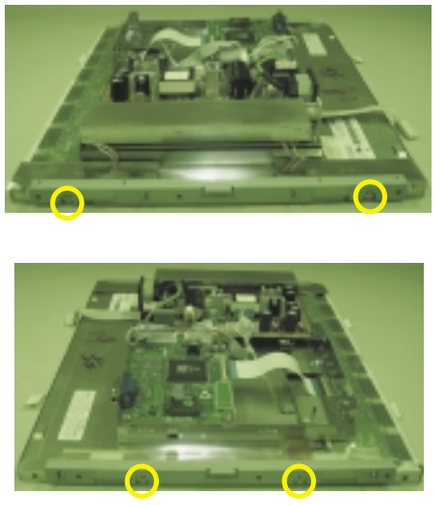


Fig. 12

8. The back cover that take out LCD panel Fig.13

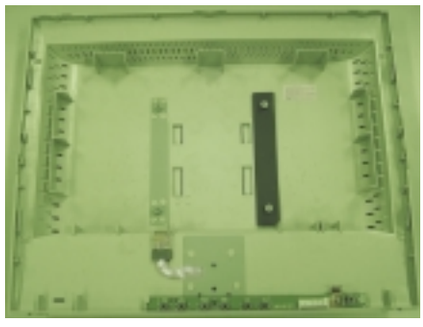


Fig. 13

9. The service position as Fig.14

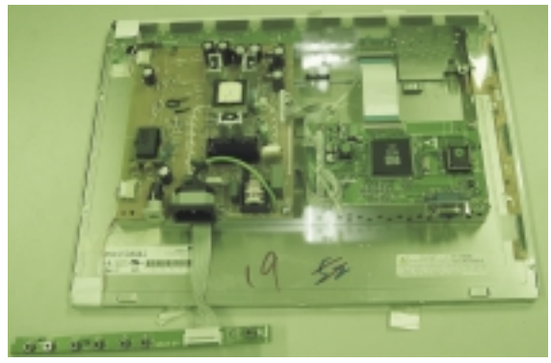


Fig. 14

Electrical instructions

0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI VGA 1024 V6-1.04/PH BETA4 interface card
- PGA 1024 (4822 212 30916), Mach 8.
- PGA 1280 (4822 212 30917), Mach 32.
- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 107kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727
19896 (ATI1024), or 4822 727 20273 (PGA 1280), or
4822 727 21046 (GPT-1600).

0.1 **With normal VGA card:**
If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.

0.2 **AC/DC Measurement:**
The measurements for AC waveform and DC figure is based on 1024 x 768 48kHz/60 Hz resolution mode with test pattern "32 gray scale".

1.General points

1.1 During the test and measuring, supply a distortion free AC mains voltage to the apparatus via an isolated transformer with low internal resistance.

1.2 All measurements mentioned hereafter are carried out at a normal mains voltage (90 - 132 VAC for USA version, 195 -264 VAC for EUROPEAN version, or 90 - 264 VAC for the model with full range power supply, unless otherwise stated.)

1.3 All voltages are to be measurement or applied with respect to ground, unless otherwise stated. Note: don't use heat-sink as ground.

1.4 The test has to be done on a complete set including LCD panel in a room with temperature of 25 +/- 5 degree C.

1.5 All values mentioned in these test instruction are only applicable of a well aligned apparatus, with correct signal.

1.6 The letters symbols (B) and (S) placed behind the test instruction denotes
(B): carried out 100% inspection at assembly line
(S): carried out test by sampling

1.7 The white balance (color temperature), has to be tested in subdued lighted room.

1.8 Repetitive power on/off cycle are allowed except it should be avoided within 6 sec.

2. Input signal

2.1 Signal type
Video : 0.7 Vp-p linear, positive polarity
Sync. : TTL level, separate, positive or negative polarity
Signal source: pattern generator format as attachment.
(table 1 to 14) Reference generator : CHROMA 2200 or 2250

2.2 Input signal mode
Pre-set 14 modes

Factory preset video resolution

Dot rate (MHz)	H.freq (KHz)	Mode	Resolution	V.freq (Hz)
25.175	31.469	IBM VGA 10h	640 * 350	70.087
28.322	31.469	IBM VGA 3h	720 * 400	70.087
25.175	31.469	IBM VGA 12h	640 * 480	59.940
30.240	35.000	MACINTOSH	640 * 480	66.667
31.500	37.861	VESA	640 * 480	72.809
31.500	37.500	VESA	640 * 480	75.000
36.000	35.156	VESA	800 * 600	56.250
40.000	37.879	VESA	800 * 600	60.317
50.000	48.077	VESA	800 * 600	72.188
49.500	46.875	VESA	800 * 600	75.000
57.300	49.700	MACINTOSH	832 * 624	75.000
65.000	48.363	VESA	1024 * 768	60.004
75.000	56.476	VESA	1024 * 768	70.069
78.750	60.023	VESA	1024 * 768	75.029

3. AC Adaptor

3.1Setup the AC I/P at 90VAC, and Output DC loading at 3.8 Amp, The DC output voltage is 12 0.5 V DC

3.2Adjustment is nothing to do

4. Display Adjustment

4.1Input signals check
In factory mode, use 64 gray level and set the R,G,B sub gain to 100%.

4.2 Display quality test
Use timing mode as described in 2.2,2.3,2.4, and use the POPO (pixel on pixel off) pattern to adjust the clock until no stripe and adjust the phase until clear picture. Check all pre-setting 14 modes.

4.3 Check of WHITE-D (B)
Apply a 48kHz/60Hz signal with white pattern, set brightness control at 100%, and contrast control at 50%. Adjust the R, G, B sub_gain, for the screen center, the 1931 CIE chromaticity (X, Y) co-ordinates shall be;

	9300°K	6500°K
x (center)	0.281 ± 0.005	0.312 ± 0.005
y (center)	0.311 ± 0.005	0.338 ± 0.005

Use Minolta CA-110 for color coordinates and luminance check.
Luminance; 250 Nits (Hannstar panel) in the center of the screen.

4.4 Check the digital interface
Set the delay time to be 6 nsec.
Check the 64 gray level color poor & noise condition.

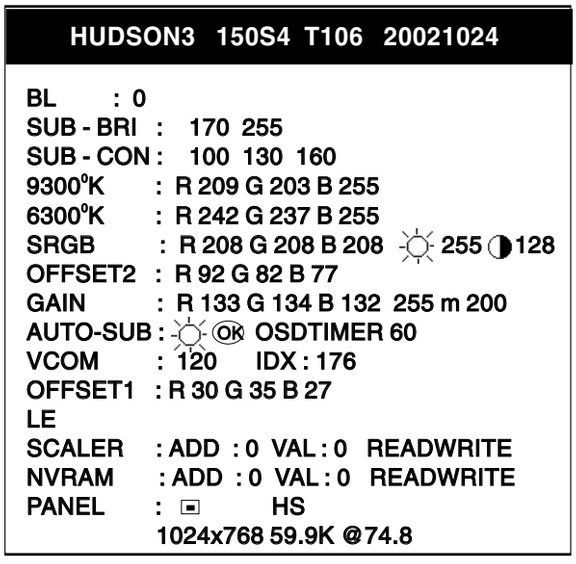
Factory Adjustment

Go to cover page

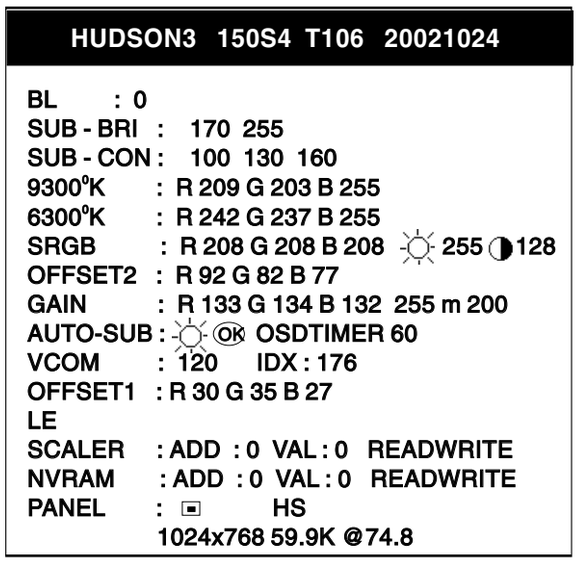
Factory Mode Adjustment

Entering Factory Adjustment Menu
Push & buttons then power on the monitor, release them after picture display normally. Press button to bring up OSD menu of factory mode as shown below.

Use button to select factory adjustment indication (for example: Hudson3 150s4 t106 20021024), which is the entrance of the factory adjustment menu, press button to access it. The window shows as below.


HUDSON3 150S4 T106 20021024
BL : 0
SUB - BRI : 170 255
SUB - CON : 100 130 160
9300°K : R 209 G 203 B 255
6300°K : R 242 G 237 B 255
SRGB : R 208 G 208 B 208 255 128
OFFSET2 : R 92 G 82 B 77
GAIN : R 133 G 134 B 132 255 m 200
AUTO-SUB : OK OSDTIMER 60
VCOM : 120 IDX : 176
OFFSET1 : R 30 G 35 B 27
LE
SCALER : ADD : 0 VAL : 0 READWRITE
NVRAM : ADD : 0 VAL : 0 READWRITE
PANEL : HS
1024x768 59.9K @74.8

Use or buttons to select SUB-CON, 9300K R G B,..etc.
Use or buttons to decrease/increase the value of each item
AUTO: adjust Sub-brightness & Sub-contrast automatically.


HUDSON3 150S4 T106 20021024
BL : 0
SUB - BRI : 170 255
SUB - CON : 100 130 160
9300°K : R 209 G 203 B 255
6300°K : R 242 G 237 B 255
SRGB : R 208 G 208 B 208 255 128
OFFSET2 : R 92 G 82 B 77
GAIN : R 133 G 134 B 132 255 m 200
AUTO-SUB : OK OSDTIMER 60
VCOM : 120 IDX : 176
OFFSET1 : R 30 G 35 B 27
LE
SCALER : ADD : 0 VAL : 0 READWRITE
NVRAM : ADD : 0 VAL : 0 READWRITE
PANEL : HS
1024x768 59.9K @74.8

Contrast adjustment (Sub-Contrast). Use this menu item to adjust the contrast gain of pre-amp ranges from 0 to 255.

9300K R G B
6500K R G B
Color temperature gain adjustment. Use these menu items to adjust the RGB gains of pre-amp for different color temperatures, ranges from 0 to 255.

OFFSET R G B
Sub-Brightness adjustment. Use this menu item to adjust the brightness level (DC-level) of pre-amp range from 0 to 255.

(PS: The Offset R G B function can be used on reduce or eliminate snowy noise on the background when the resolution of video signal is 1024 X 768 vertical 60Hz. Slightly increase or decrease the value until snowy noise completely disappear.)

Safety Test Requirements

All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both *Hipot* and *Ground Continuity* testing.

HI-POT TEST INSTRUCTION

1. Application requirements

1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.

1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.

2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.

2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: <=0.09+R ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time	set at 2 seconds		

2.2.1 The test with AC voltage is only for production purpose, **Service center shall use DC voltage.**

2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute. No breakdown during the test.

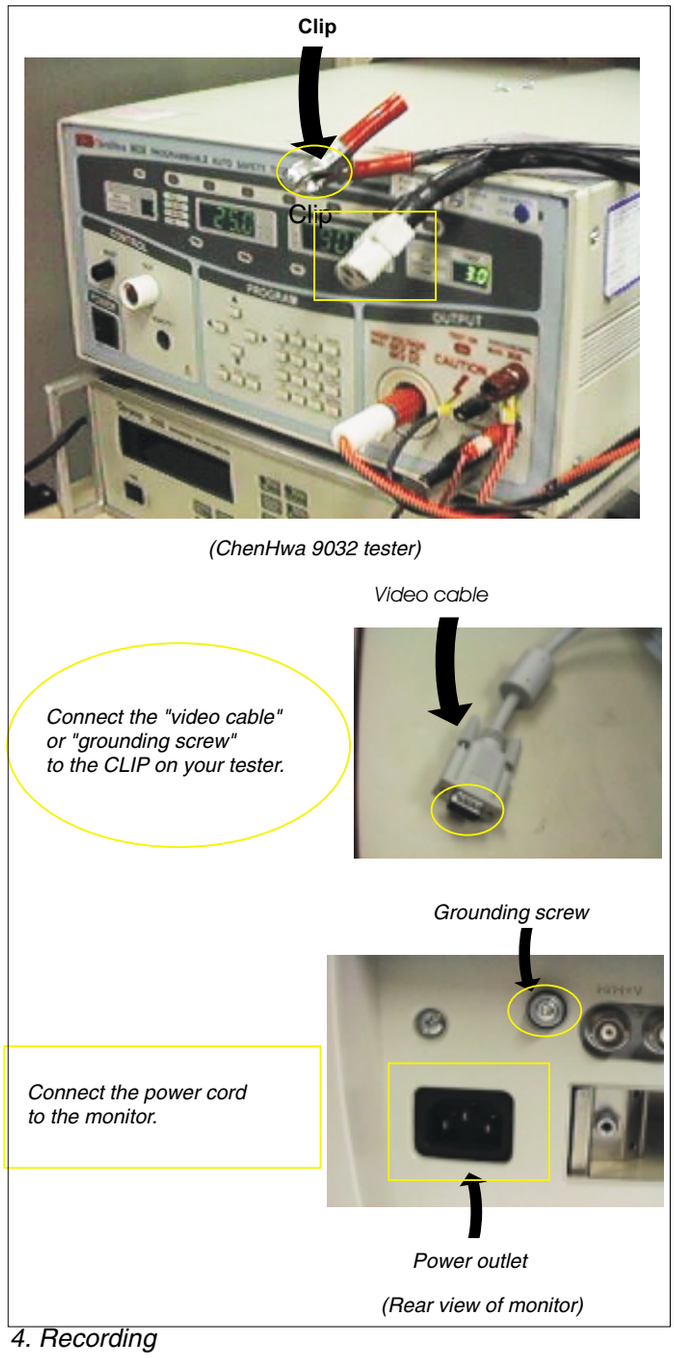
2.2.3 The test voltage must be maintained within the specified voltage + 5%.

2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

3. Equipments and Connection

3.1. Equipments
For example :
- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
- ChenHwa 510B Digital Grounding Continuity Tester
- ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2. Connection
* Turn on the power switch of monitor before Hipot and Ground Continuity testing.



4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

DDC Instructions

General

DDC Data Re-programming
In case the DDC data memory IC or main EEPROM which storage all factory settings were replaced due to a defect, the serial numbers have to be re-programmed.
It is advised to re-soldered DDC IC and main EEPROM from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information
Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

DDC EDID structure
For Analog interface: Standard Version 3.0
Structure Version 1.2
For Digital inferface: Standard Version 3.0
Structure Version 1.3

System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98.
3. EDID301.EXE program (3138 106 10103) as shown in Fig. 1
4. A/D Alignment kits (3138 106 10079):
   inclusion : a. Alignment box x1 (as Fig. 2)

Fig. 2

b. Printer cable x1
c. (D-Sub) to (D-Sub) cable x1

Note: The EDID301.EXE (Release Version 1.58 20000818)is a windows-based program, which cannot be run in MS-DOS.

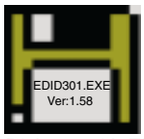
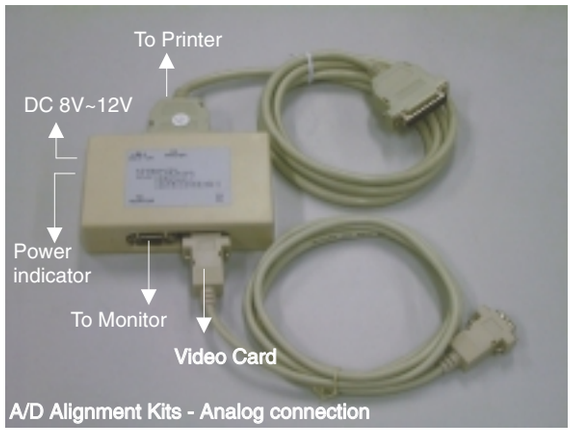


Fig. 1

Diskette with EDID301.EXE

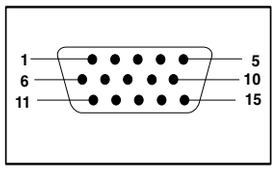


A/D Alignment Kits - Analog connection

Note: The alignment box has already build-in a batteries socket for using batteries (9V) as power source. Pull out the socket by remove four screws at the rear of box. Please do not forget that remove batteries after programming. The energy of batteries can only drive circuits for a short period of time.

Pin assignment

A. 15-pin D-Sub Connector



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	+5V
2	Green video input	10	Ground
3	Blue video input	11	Ground
4	Ground	12	Serial data line(SDA)
5	No Connected	13	H.Sync
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

4. Configuration and procedure

There are two ICs contained serial number on the circuit board, Analog Flash ROM IC (7301), and main EEPROM (7302) which storage all factory settings. Following descriptions are the connection and procedure for Analog Flash ROM IC , the main EEPROM can be re-programmed along with Analog IC by enable factory memory data write function on the DDC program (EDID301.EXE).

Initialize alignment box

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before running programming software (EDID301.EXE). Following steps show you the procedures and connection.

Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
Step 2: Connecting printer cable and video cable of monitor as Fig. A
Step 3: Run the EDID301.EXE program until the main menu appears. This is for initialize alignment box.

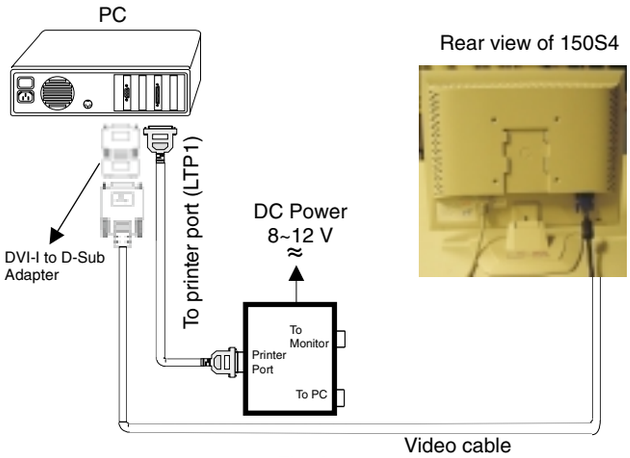


Fig. A

Note: DVI-I to D-Sub adapter can be removed if graphic card of PC with a DVI-I interface connector.

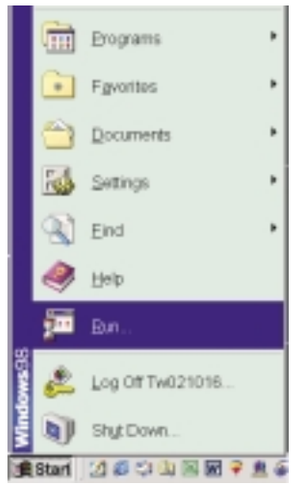
Re-programming DDC IC

Step 1: After initialize alignment box, connecting all cables and box as Fig. 3
Step 2: Press and hold and buttons then power on the monitor.
Step 3: Follow the steps on DDC re-programming instructions to staring re-programming.

5. DDC re-programming instructions

Start on DDC program

Start Microsoft Windows.
1. Insert the disk containing EDID301.EXE program into floppy disk drive.
2. Click Start , choose Run at start menu of Windows 95/98.



DDC Instructions

3. At the submenu, type the letter of your computer's floppy disk drive followed by :EDID301 (for example, A:\EDID301.exe,) as shown in Fig. 5.

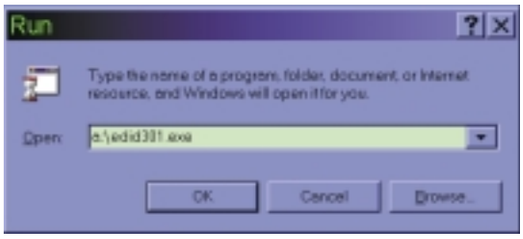


Fig. 5

4. Click [OK] button. The main menu appears (as shown on Fig. 6).

Fig. 6

Note:

If the connection is improper, you will see the following error message before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the

Loading DDC data from monitor

1. Click icon on the tools bar to bring up the Configuration Setup windows as Fig.7
2. Select the DDC2B as the communication channel.
3. Enable Factory memory data write function and fill in page address F0 to the block.
4. Disable Software DDC function.
5. Click [OK] button to confirm your selection.

Note: The Factory memory data write function will allow EDID30 to rewrite serial numbers both Analog DDC IC and main EEPROM to make sure both S/N are exactly the same. You may confirm the function by checking the S/N at Product information of the OSD menu after restarting the monitor.

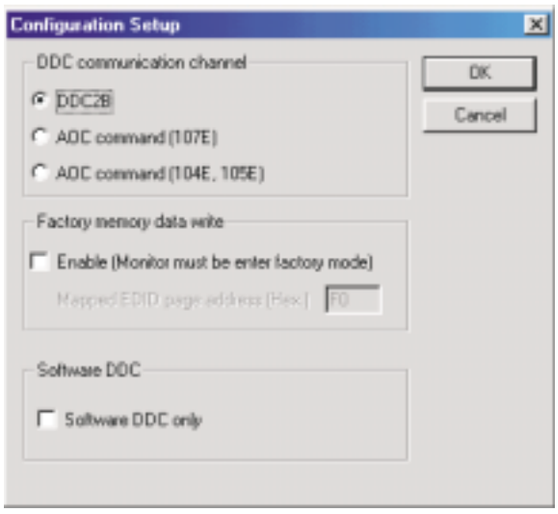
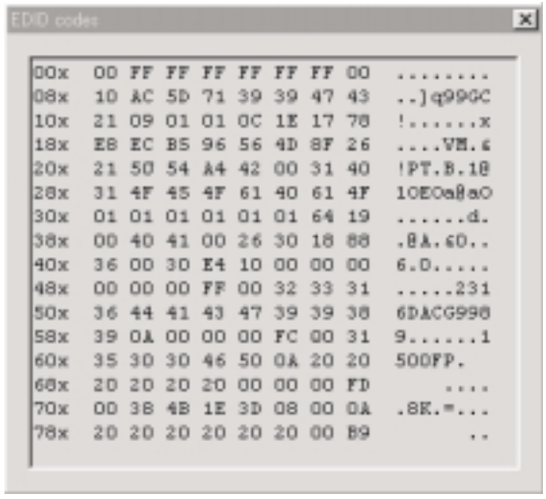


Fig. 7

6. Click icon to read DDC EDID data from monitor. The EDID codes will display on screen as following. (The EDID codes are depend on the model.) Meanwhile, The status bar will indicate 00% to 100% when reading.



DDC Instructions

Note:

During the loading, EDID30 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen (Fig. 8). Please confirm following steps to avoid this message.

1. The data structure of EDID was incorrect.
2. DDC IC that you are trying to load data is empty.
3. Wrong communication channel has set at configuration setup Windows.
4. Cables loosed or poor contact of connection.

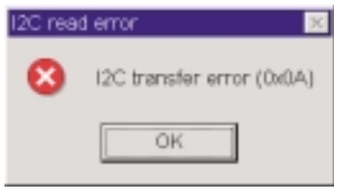
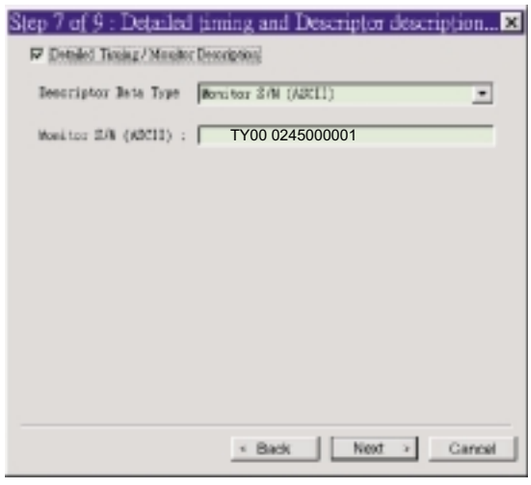


Fig. 8

Modify DDC data (Serial No.)

1. Click icon on the toosl bar.
2. Click till the Step 7 of 9 window appears.
3. Type the new Serial No. (for example, TY00 0245000001).
4. Click till the last step window appears, then click to exit the Step window.


Step 7 of 9 : Detailed timing and Descriptor description...
Detailed Timing / Monitor Descriptor
Descriptor Data Type
Monitor S/N (ASCII)
Monitor S/N (ASCII) :
TY00 0245000001
< Back
Next >
Cancel

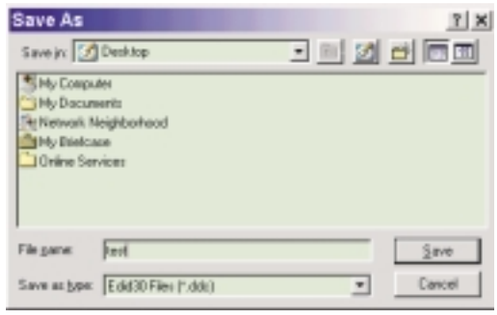
Write DDC data to monitor

1. Click icon from the tools bar to starting rewrite DDC data.
2. Click for confirmation.

Save DDC data as a file

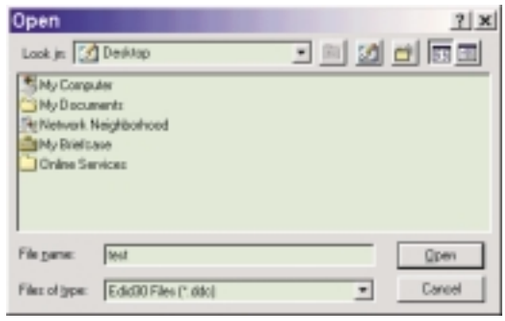
Sometimes, you maybe need to save DDC data as a text file for using on other DDC chip. To save DDC data, follow the steps below:

1. Click icon on the tools bar and type a file name you like. The file format is ddc type which can be open by Microsoft WordPad.
2. Click button.



Load DDC data from file

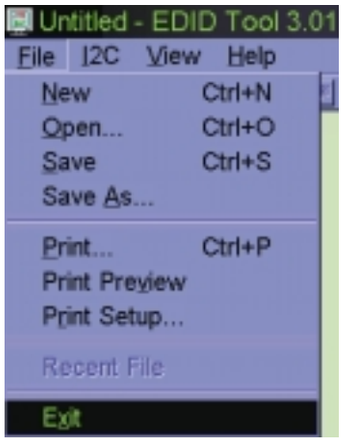
1. Click from the tools bar.
2. Select the file you want to open.
3. Click . Button.



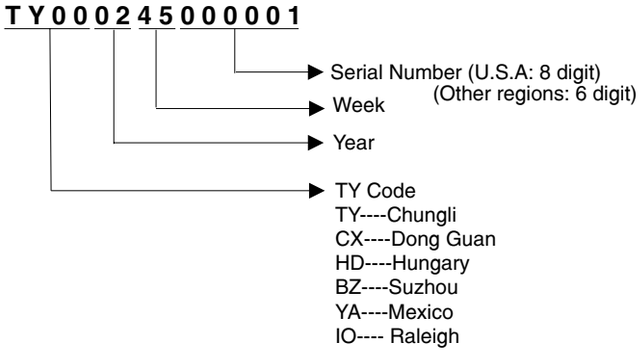
4. Now you can re-programming DDC data which you just loaded from a file, please be confirmed that model and serial number are correct and match with the monitor you are trying to re-write.

Exit DDC program

1. Click file command on the command bar then select Exit.



Definition of Serial Number



Serial number modification - EEPROM (OSD)

When the serial number inside DDC IC has been changed, the serial number inside EEPROM (in User mode, the serial number of monitor can be found by OSD as shown in Fig. 1 also.) should be changed at the same time.

Serial number modification in EEPROM (near CPU) for On Screen Display (Factory mode & User mode)

PRODUCT INFORMATION
SERIAL NO : 123456 RESOLUTION : 1024x768 @75Hz VIDEO INPUT : ANALOG
OK BACK TO MAIN CONTROLS

Fig. 1

Due to different communication structures were implement for DDC IC and EEPROM (serial number) application as below.

(15pin D-SUB) --------- CPU --------- EEPROM (OSD -> Serial number)
I2C I2C

Update/Modify the serial number of monitor as shown in Fig. 1, please follow the steps as below.
Hardware connection and procedure as below show.
Step 1 : Supply 8~12VDC power source to alignment box by plugging a DC power cord or using batteries.
Step 2 : Connecting printer cable and Video cable of monitor as Fig.A

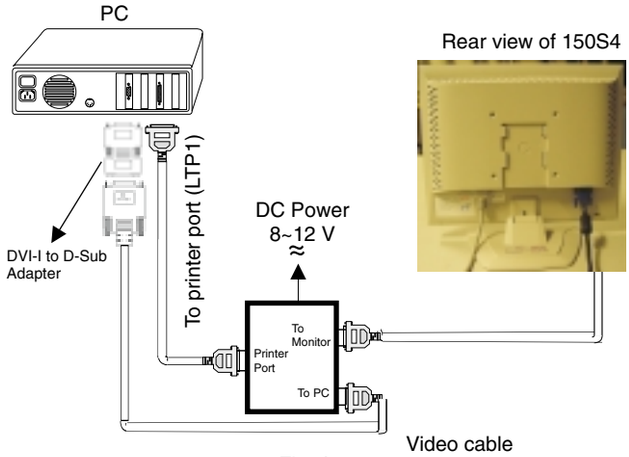


Fig. A

From PC MS Mode to run the I2c.exe and IICINF.exe
Step 1: Run I2C.exe as Fig. 2 then follow this step to change the S/N.
Serial Number edit for Hudson3
Tools Name : I2C.EXE under MS Mode
A:>I2C.exe 0 TY_123456
Parameter1: I2C interface
0: Use printer port
1: Use DI/o port
Parameter2: Serial Number
EX: TY_123456
[_] : Mean Space
PS: The program needs to include IICinf.exe
Version 2.11a6.01 2002-11-14 or later

Fig. 2

Step 2: After run a:>I2C.exe 0 TY_000082 you get below as Fig.3
The S/N change ok .

Fig. 3

Step 3: check serial number from production information in OSD menu
=> TY 000082

PRODUCT INFORMATION
SERIAL NO : 000082 RESOLUTION : 1024x768 @75Hz VIDEO INPUT : ANALOG
OK BACK TO MAIN CONTROLS

Fig. 4

ISP CABLE for CPU

Go to cover page

Configuration and procedure

ISP (In System Program) software is provided by Genesis to upgrade the firmware of flash ROM and Factory default data of EEPROM.
It is a DOS-based program, which **cannot** be run in MS-Windows.

ISP cable is for the interface between "Parallel Port of PC" and "15 pin-D-SUB connector of Monitor".

System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98
   => **DOS environment**.
3. ISP Software (Please use latest version from philips)
4. ISP Cable (3138 106 10213) as shown in Fig. 1
5. Set up PC Monitor as shown in Fig. 2

Fig. 1 => ISP CABLE : 12nc is "3138 106 10213.

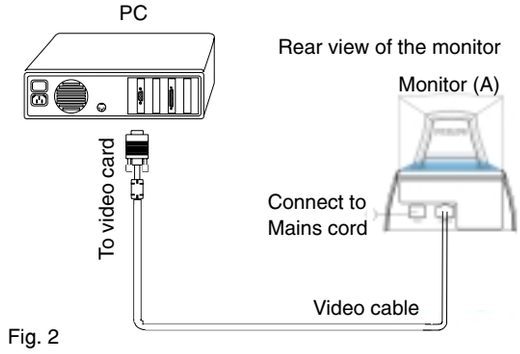


Fig. 2

Step 1 : Make a folder in your PC as shown in Fig. 3.
For example : C:\ISP_H3HSV200

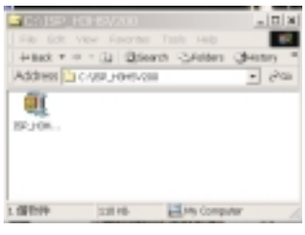


Fig. 3

Step 2 : Copy ISP Software (ISP_H3HSV200.zip) into your folder as Shown in Fig.3.
Step 3 : Unzip isp.zip into your folder as shown in Fig. 4.
Step 4 : Copy the updated Firmware/ Factory Default data for HS panel (for example : HSV200 for EEPROM) as shown in Fig.4.

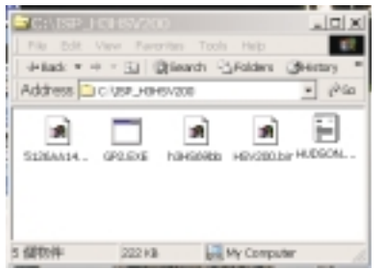


Fig. 4

Step 5 : Connect ISP cable between PC and Monitor (B)as shown in Fig. 5.

Step 6 : Execute ISP Software in Monitor (A) as shown in Fig. 5.
1.=> At DOS command line ,Execute ISP software GP2.exe, C:\ISP>GP2.exe then the prompt command line appear AA:2>
2.=>type in AA:2>batch HUDSON.txt ,a group of messages are shown Fig 6.The execution time is displayed on last line
3.=>After the prompt command line AA:2> appear again, it means that the update procedure is complete.
4.=>Type exit to exit ISP software.
5.=>Please do AC power OFF , then power ON,To restart CPU.

Remark: for debug
If show [fail] in any line, means error binary file name or error evices file. Pls check HUDSON.txt and confirm file is in directory. Then execute again.
Attention : Do not power off your system before you finish you ISP function .

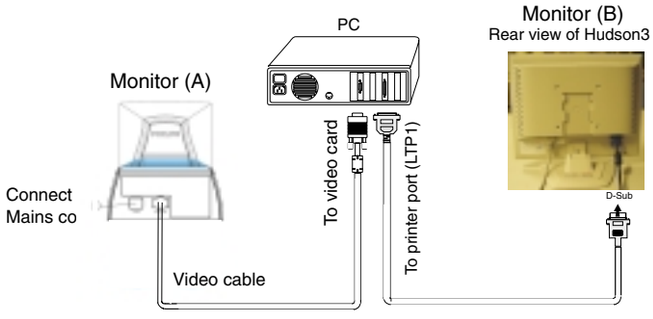


Fig. 5

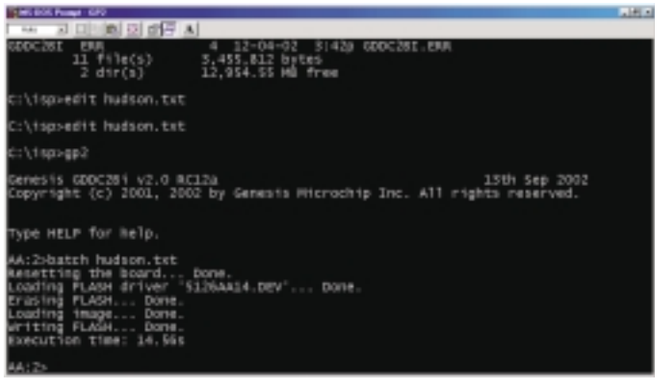


Fig. 6

DDC data of Analog

THE DISPLAY DATA CHANNEL (DDC) 1/2B CONTENT INCLUDING (FOR Hannstar ANALOG)

Vendor/Product Identification
- ID Manufacturer Name : PHL
- ID Product Code : 0812 (HEX.)
- ID Serial Number : 1E240 (HEX.)
- Week of Manufacture : 35
- Year of Manufacture : 2002

EDID Version, Revision
- Version : 1
- Revision : 3

Basic Display Parameters/Features
- Video Input Definition : Analog Video Input
  0.700V/0.300V (1.00Vpp)
  without Blank-to-Black Setup
  Separate Sync
  Composite Sync
  Sync on Green
  no Serration required
- Maximum H Image Size : 30
- Maximum V Image Size : 23
- Display Transfer Characteristic (gamma) : 2.2
- Feature Support (DPMS) :Standby
  Suspend
  Active Off
- Display Type : RGB color display
- Preferred Timing Mode : Detailed timing block 1

Color Characteristics
- Red X coordinate : 0.627
- Red Y coordinate : 0.338
- Green X coordinate : 0.296
- Green Y coordinate : 0.596
- Blue X coordinate : 0.149
- Blue Y coordinate : 0.116
- White X coordinate : 0.315
- White Y coordinate : 0.333

Established Timings
- Established Timings I :720 x 400 @70Hz (IBM,VGA)
  640 x 480 @60Hz (IBM,VGA)
  640 x 480 @67Hz (Apple,Mac II)
  640 x 480 @72Hz (VESA)
  640 x 480 @75Hz (VESA)
  800 x 600 @56Hz (VESA)
  800 x 600 @60Hz (VESA)
- Established Timings II :800 x 600 @72Hz (VESA)
  800 x 600 @75Hz (VESA)
  832 x 624 @75Hz (Apple,Mac II)
  1024 x 768 @60Hz (VESA)
  1024 x 768 @70Hz (VESA)
  1024 x 768 @75Hz (VESA)
- Manufacturer's timings :

Standard Timing Identification #1
- Horizontal active pixels : 640
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #2
- Horizontal active pixels : 640
- Aspect Ratio : 4:3
- Refresh Rate : 75

Standard Timing Identification #3
- Horizontal active pixels : 800
- Aspect Ratio : 4:3
- Refresh Rate : 75

Standard Timing Identification #4
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #5
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 75

Detailed Timing #1
- Pixel Clock (MHz) : 65
- H Active (pixels) : 1024
- H Blanking (pixels) : 320
- V Active (lines) : 768
- V Blanking (lines) : 38
- H Sync Offset (F Porch) (pixels): 24
- H Sync Pulse Width (pixels) : 136
- V Sync Offset (F Porch) (lines) : 3
- V Sync Pulse Width (lines) : 6
- H Image Size (mm) : 307
- V Image Size (mm) : 230
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  : Normal Display, No stereo
  : Digital Separate sync.
  : Negative Vertical Sync.
  : Negative Horizontal Sync.

Monitor Descriptor #2
- Serial Number : TY 123456

Monitor Descriptor #3
- Monitor Name : PHILIPS 150S

Monitor Descriptor #4
- Monitor Range Limits
- Min. Vt rate Hz : 56
- Max. Vt rate Hz : 76
- Min. Horiz. rate kHz : 30
- Max. Horiz. rate kHz : 63
- Max. Supported Pixel : 80

Extension Flag : 0

Check sum : 8D (HEX.)

****
EDID data (128 bytes)
****

```
 0: 00  1: ff  2: ff  3: ff  4: ff  5: ff  6: ff  7: 00
 8: 41  9: 0c 10: 12 11: 08 12: 40 13: e2 14: 01 15: 00
16: 23 17: 0c 18: 01 19: 03 20: 0e 21: 1e 22: 17 23: 78
24: ea 25: ae 26: 7d 27: a0 28: 56 29: 4b 30: 98 31: 26
32: 1d 33: 50 34: 55 35: bf 36: ee 37: 00 38: 01 39: 01
40: 01 41: 01 42: 01 43: 01 44: 01 45: 01 46: 01 47: 01
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 64 55: 19
56: 00 57: 40 58: 41 59: 00 60: 26 61: 30 62: 18 63: 88
64: 36 65: 00 66: 33 67: e6 68: 10 69: 00 70: 00 71: 18
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59
80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50
96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 31
104: 35 105: 30 106: 53 107: 0a 108: 00 109: 00 110: 00 111: fd
112: 00 113: 38 114: 4c 115: 1e 116: 3f 117: 08 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 8d
```

DDC data of Analog

THE DISPLAY DATA CHANNEL (DDC) 1/2B CONTENT INCLUDING (FOR LG ANALOG)

Vendor/Product Identification
- ID Manufacturer Name : PHL
- ID Product Code : 0812 (HEX.)
- ID Serial Number : 1E240 (HEX.)
- Week of Manufacture : 35
- Year of Manufacture : 2002

EDID Version, Revision
- Version : 1
- Revision : 3

Basic Display Parameters/Features
- Video Input Definition : Analog Video Input
  0.700V/0.300V (1.00Vpp)
  without Blank-to-Black Setup
  Separate Sync
  Composite Sync
  Sync on Green
  no Serration required
- Maximum H Image Size : 30
- Maximum V Image Size : 23
- Display Transfer Characteristic (gamma) : 2.2
- Feature Support (DPMS) :Standby
  Suspend
  Active Off
- Display Type : RGB color display
- Preferred Timing Mode : Detailed timing block 1

Color Characteristics
- Red X coordinate : 0.626
- Red Y coordinate : 0.347
- Green X coordinate : 0.308
- Green Y coordinate : 0.588
- Blue X coordinate : 0.146
- Blue Y coordinate : 0.119
- White X coordinate : 0.313
- White Y coordinate : 0.329

Established Timings
- Established Timings I :720 x 400 @70Hz (IBM,VGA)
  640 x 480 @60Hz (IBM,VGA)
  640 x 480 @67Hz (Apple,Mac II)
  640 x 480 @72Hz (VESA)
  640 x 480 @75Hz (VESA)
  800 x 600 @56Hz (VESA)
  800 x 600 @60Hz (VESA)
- Established Timings II :800 x 600 @72Hz (VESA)
  800 x 600 @75Hz (VESA)
  832 x 624 @75Hz (Apple,Mac II)
  1024 x 768 @60Hz (VESA)
  1024 x 768 @70Hz (VESA)
  1024 x 768 @75Hz (VESA)
- Manufacturer's timings :

Standard Timing Identification #1
- Horizontal active pixels : 640
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #2
- Horizontal active pixels : 640
- Aspect Ratio : 4:3
- Refresh Rate : 75

Standard Timing Identification #3
- Horizontal active pixels : 800
- Aspect Ratio : 4:3
- Refresh Rate : 75

Standard Timing Identification #4
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #5
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 75

Detailed Timing #1
- Pixel Clock (MHz) : 65
- H Active (pixels) : 1024
- H Blanking (pixels) : 320
- V Active (lines) : 768
- V Blanking (lines) : 38
- H Sync Offset (F Porch) (pixels): 24
- H Sync Pulse Width (pixels) : 136
- V Sync Offset (F Porch) (lines) : 3
- V Sync Pulse Width (lines) : 6
- H Image Size (mm) : 307
- V Image Size (mm) : 230
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  : Normal Display, No stereo
  : Digital Separate sync.
  : Negative Vertical Sync.
  : Negative Horizontal Sync.

Monitor Descriptor #2
- Serial Number : TY 123456

Monitor Descriptor #3
- Monitor Name : PHILIPS 150S

Monitor Descriptor #4
- Monitor Range Limits
- Min. Vt rate Hz : 56
- Max. Vt rate Hz : 76
- Min. Horiz. rate kHz : 30
- Max. Horiz. rate kHz : 63
- Max. Supported Pixel : 80

Extension Flag : 0

Check sum : 93 (HEX.)

****
EDID data (128 bytes)
****

```
 0: 00  1: ff  2: ff  3: ff  4: ff  5: ff  6: ff  7: 00
 8: 41  9: 0c 10: 12 11: 08 12: 40 13: e2 14: 01 15: 00
16: 23 17: 0c 18: 01 19: 03 20: 0e 21: 1e 22: 17 23: 78
24: ea 25: 7e 26: a5 27: a0 28: 58 29: 4e 30: 96 31: 25
32: 1e 33: 50 34: 54 35: bf 36: ee 37: 00 38: 01 39: 01
40: 01 41: 01 42: 01 43: 01 44: 01 45: 01 46: 01 47: 01
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 64 55: 19
56: 00 57: 40 58: 41 59: 00 60: 26 61: 30 62: 18 63: 88
64: 36 65: 00 66: 33 67: e6 68: 10 69: 00 70: 00 71: 18
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59
80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50
96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 31
104: 35 105: 30 106: 53 107: 0a 108: 00 109: 00 110: 00 111: fd
112: 00 113: 38 114: 4c 115: 1e 116: 3f 117: 08 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 93
```

DDC data of Analog

THE DISPLAY DATA CHANNEL (DDC) 1/2B CONTENT INCLUDING (FOR CPT ANALOG)

Vendor/Product Identification
- ID Manufacturer Name : PHL
- ID Product Code : 0812 (HEX.)
- ID Serial Number : 1E240 (HEX.)
- Week of Manufacture : 35
- Year of Manufacture : 2002

EDID Version, Revision
- Version : 1
- Revision : 3

Basic Display Parameters/Features
- Video Input Definition : Analog Video Input
  0.700V/0.300V (1.00Vpp)
  without Blank-to-Black Setup
  Separate Sync
  Composite Sync
  Sync on Green
  no Serration required
- Maximum H Image Size : 30
- Maximum V Image Size : 23
- Display Transfer Characteristic (gamma) : 2.2
- Feature Support (DPMS) :Standby
  Suspend
  Active Off
- Display Type : RGB color display
- Preferred Timing Mode : Detailed timing block 1

Color Characteristics
- Red X coordinate : 0.643
- Red Y coordinate : 0.344
- Green X coordinate : 0.304
- Green Y coordinate : 0.566
- Blue X coordinate : 0.141
- Blue Y coordinate : 0.085
- White X coordinate : 0.312
- White Y coordinate : 0.318

Established Timings
- Established Timings I :720 x 400 @70Hz (IBM,VGA)
  640 x 480 @60Hz (IBM,VGA)
  640 x 480 @67Hz (Apple,Mac II)
  640 x 480 @72Hz (VESA)
  640 x 480 @75Hz (VESA)
  800 x 600 @56Hz (VESA)
  800 x 600 @60Hz (VESA)
- Established Timings II :800 x 600 @72Hz (VESA)
  800 x 600 @75Hz (VESA)
  832 x 624 @75Hz (Apple,Mac II)
  1024 x 768 @60Hz (VESA)
  1024 x 768 @70Hz (VESA)
  1024 x 768 @75Hz (VESA)
- Manufacturer's timings :

Standard Timing Identification #1
- Horizontal active pixels : 640
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #2
- Horizontal active pixels : 640
- Aspect Ratio : 4:3
- Refresh Rate : 75

Standard Timing Identification #3
- Horizontal active pixels : 800
- Aspect Ratio : 4:3
- Refresh Rate : 75

Standard Timing Identification #4
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 60

Standard Timing Identification #5
- Horizontal active pixels : 1024
- Aspect Ratio : 4:3
- Refresh Rate : 75

Detailed Timing #1
- Pixel Clock (MHz) : 65
- H Active (pixels) : 1024
- H Blanking (pixels) : 320
- V Active (lines) : 768
- V Blanking (lines) : 38
- H Sync Offset (F Porch) (pixels): 24
- H Sync Pulse Width (pixels) : 136
- V Sync Offset (F Porch) (lines) : 3
- V Sync Pulse Width (lines) : 6
- H Image Size (mm) : 307
- V Image Size (mm) : 230
- H Border (pixels) : 0
- V Border (lines) : 0
- Flags : Non-interlaced
  : Normal Display, No stereo
  : Digital Separate sync.
  : Negative Vertical Sync.
  : Negative Horizontal Sync.

Monitor Descriptor #2
- Serial Number : TY 123456

Monitor Descriptor #3
- Monitor Name : PHILIPS 150S

Monitor Descriptor #4
- Monitor Range Limits
- Min. Vt rate Hz : 56
- Max. Vt rate Hz : 76
- Min. Horiz. rate kHz : 30
- Max. Horiz. rate kHz : 63
- Max. Supported Pixel : 80

Extension Flag : 0

Check sum : FC (HEX.)

****

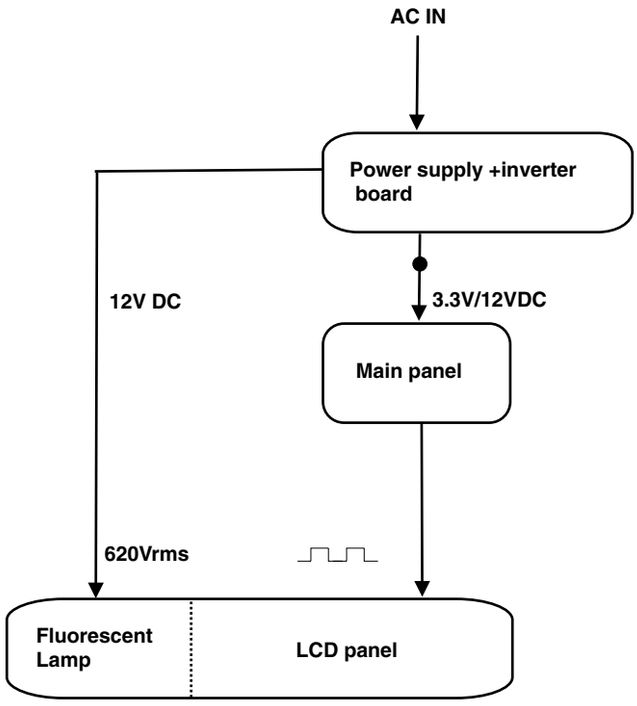
EDID data (128 bytes)

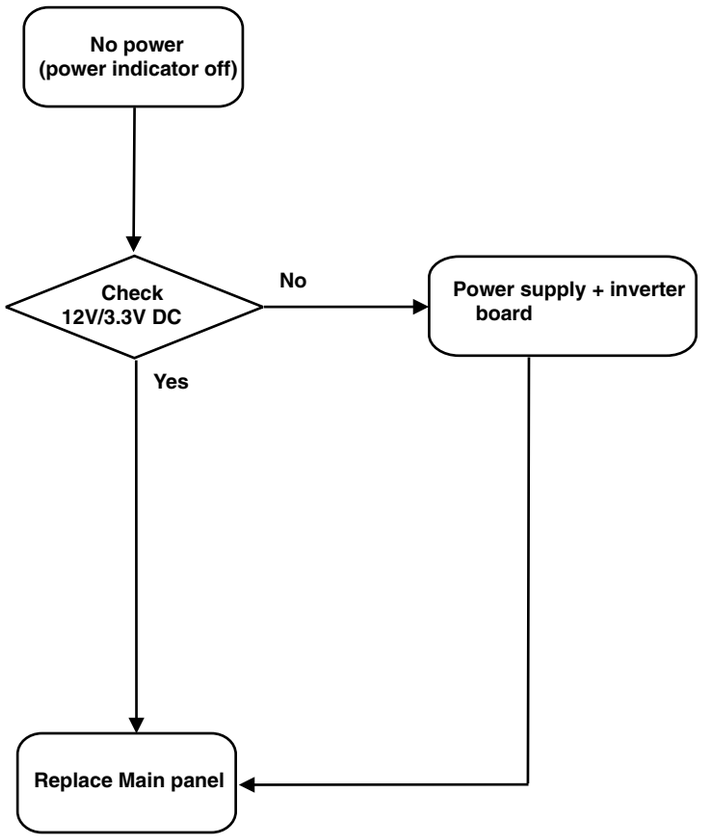
****

```
 0: 00  1: ff  2: ff  3: ff  4: ff  5: ff  6: ff  7: 00
 8: 41  9: 0c 10: 12 11: 08 12: 40 13: e2 14: 01 15: 00
16: 23 17: 0c 18: 01 19: 03 20: 0e 21: 1e 22: 17 23: 78
24: ea 25: 8c 26: 3e 27: a4 28: 58 29: 4d 30: 91 31: 24
32: 15 33: 4f 34: 51 35: bf 36: ee 37: 00 38: 01 39: 01
40: 01 41: 01 42: 01 43: 01 44: 01 45: 01 46: 01 47: 01
48: 01 49: 01 50: 01 51: 01 52: 01 53: 01 54: 64 55: 19
56: 00 57: 40 58: 41 59: 00 60: 26 61: 30 62: 18 63: 88
64: 36 65: 00 66: 33 67: e6 68: 10 69: 00 70: 00 71: 18
72: 00 73: 00 74: 00 75: ff 76: 00 77: 20 78: 54 79: 59
80: 20 81: 20 82: 31 83: 32 84: 33 85: 34 86: 35 87: 36
88: 0a 89: 20 90: 00 91: 00 92: 00 93: fc 94: 00 95: 50
96: 68 97: 69 98: 6c 99: 69 100: 70 101: 73 102: 20 103: 31
104: 35 105: 30 106: 53 107: 0a 108: 00 109: 00 110: 00 111: fd
112: 00 113: 38 114: 4c 115: 1e 116: 3f 117: 08 118: 00 119: 0a
120: 20 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: fc
```

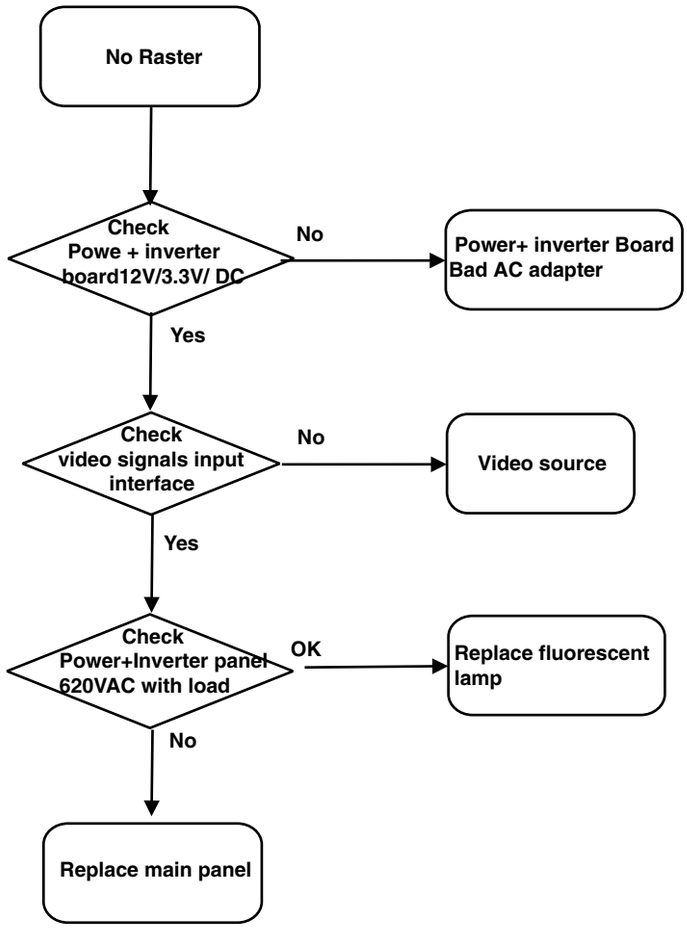
Repair Flow Chart

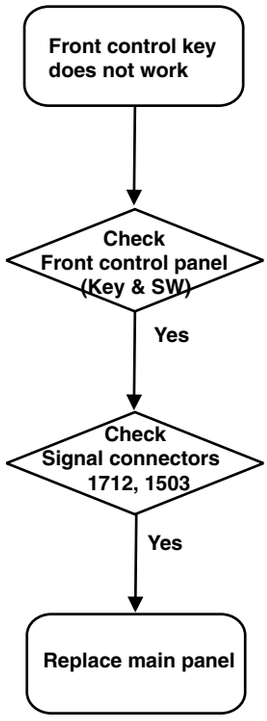
Block Diagram



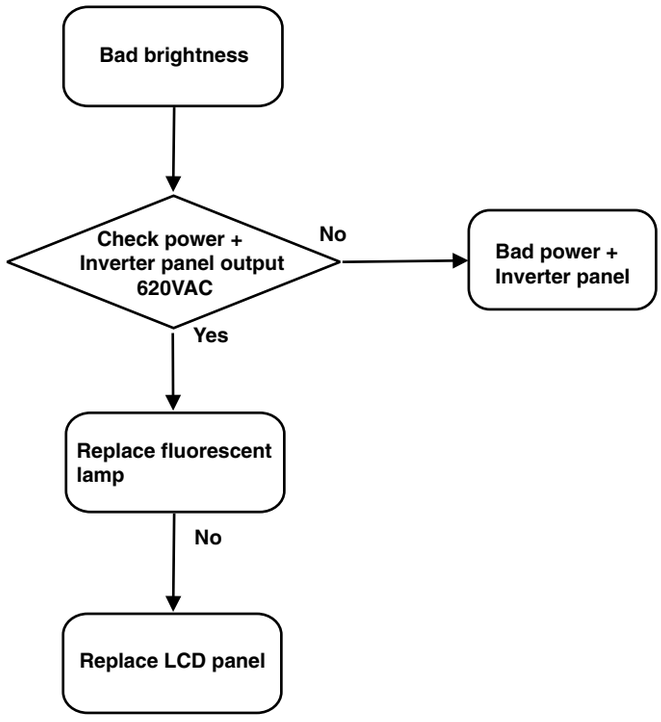


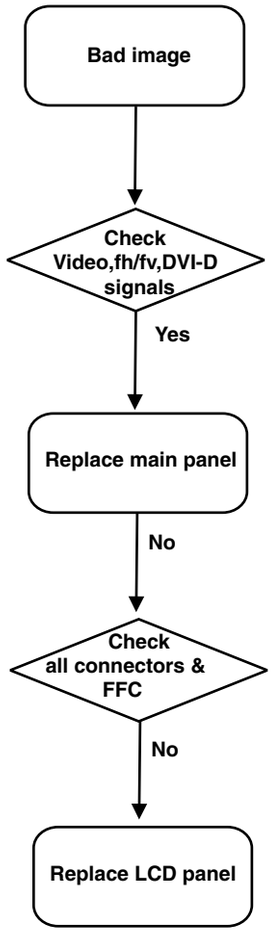
Repair Flow Chart





Repair Flow Chart





Colour adjustment

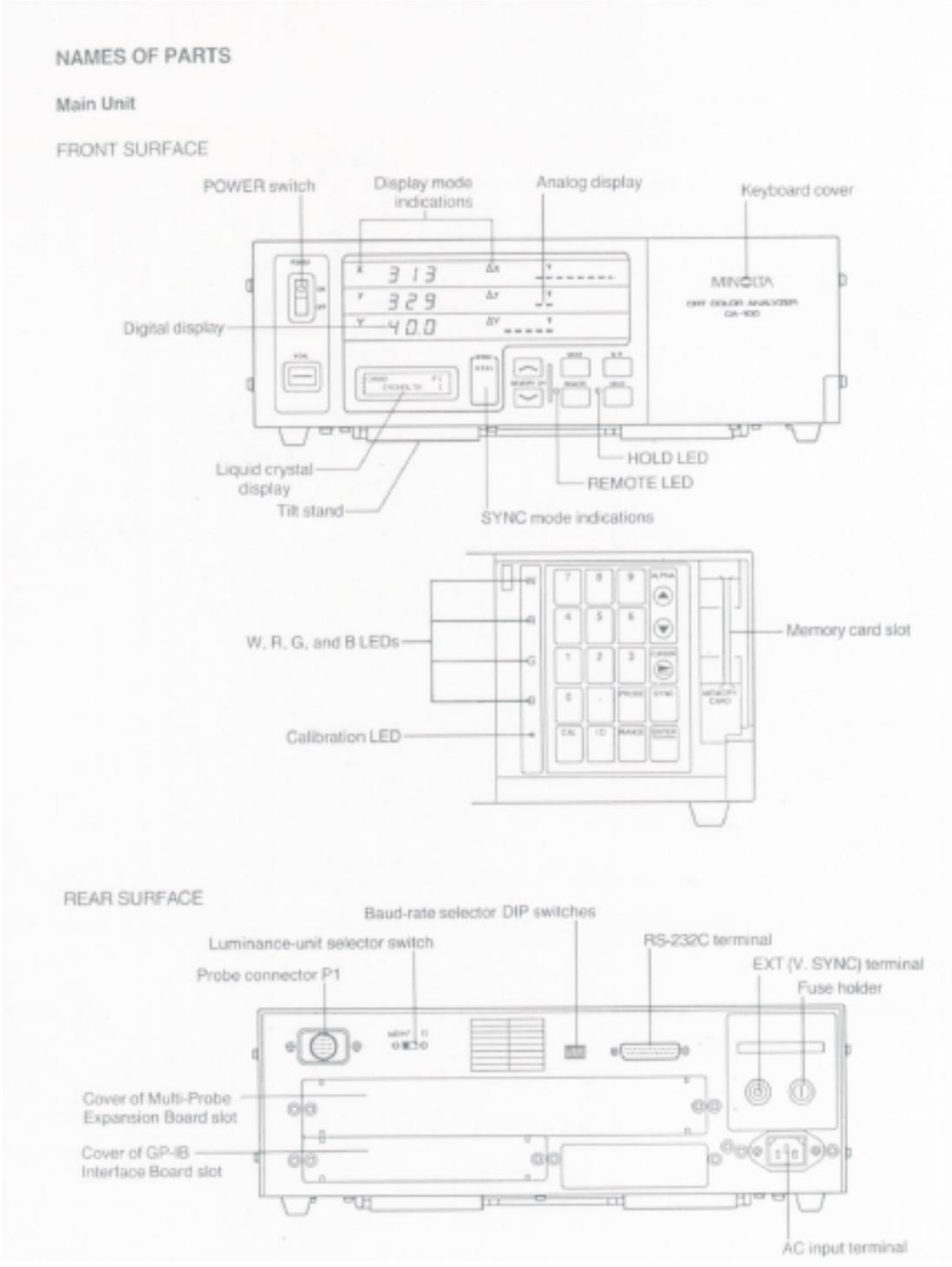
LCD COLOUR ANALYZER - CA110

1. SUMMARY

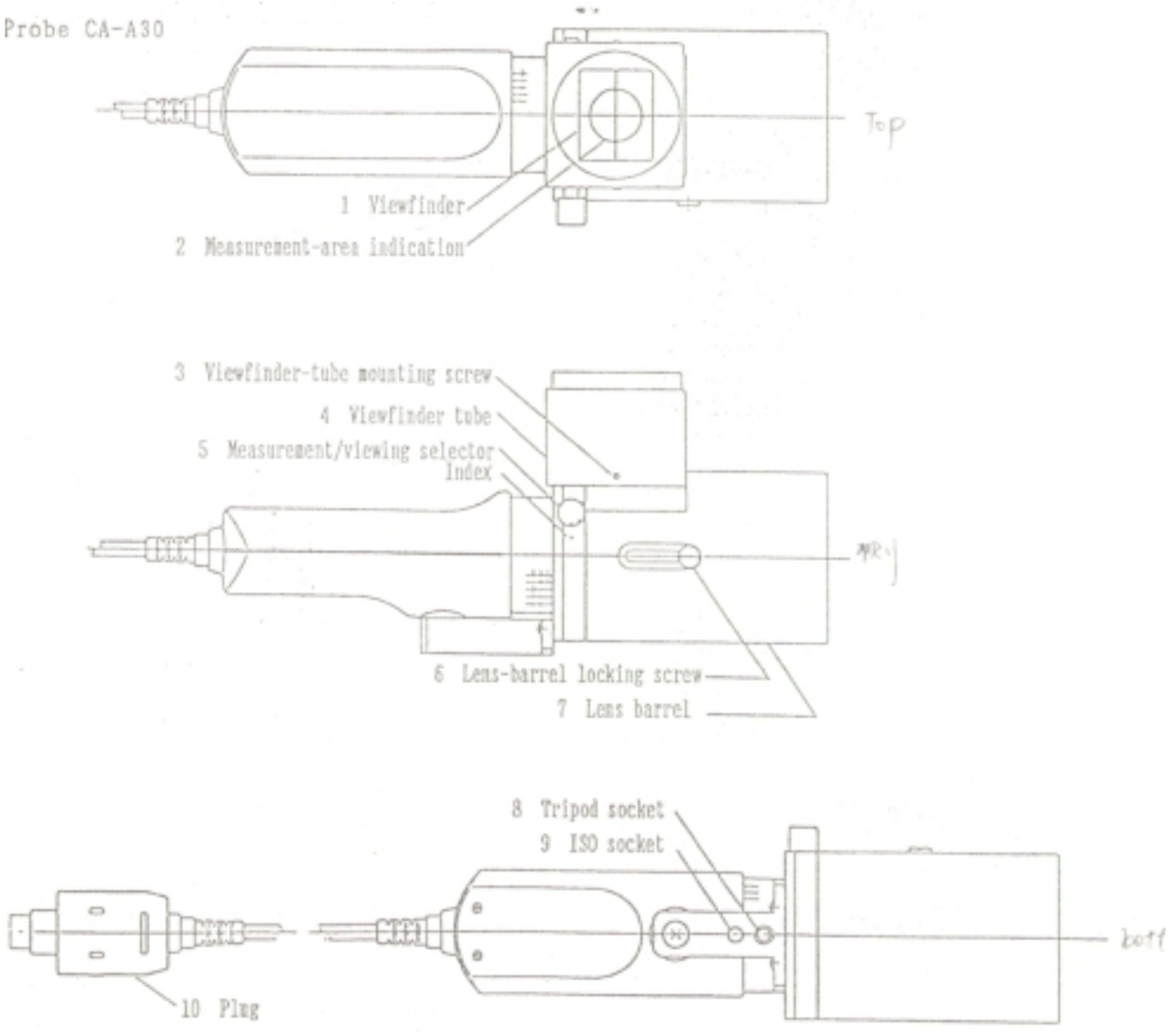
The LCD Colour Analyzer CA-110 was designed to upgrade the white-balanceprocess on production lines for colour LCD televisions and computer colour LCD panels in the colour LCD industry. The CA-110 consists of a main unit and a measuring probe.
The measuring probe utilizes an optical system suitable for measurement of colour LCDs and is equipped with a viewfinder to verify the area to be measured.

2. APPLICATIONS

* White-balance adjustment and inspection on LCD production lines.
* Quality control and shipping inspection by LCD manufacturers.
* Inspection of LCDs upon receipt by computer manufacturers.



Colour Adjustment



1.	Viewfinder	Shows image seen by measuring probe.
2.	Measurement-area indication	Indicates area to be measured.
3.	Viewfinder-tube mounting screw	Removing these two screws (one on each side) allows the viewfinder tube to be removed to clean viewfinder, etc.
4.	Viewfinder tube	Can be moved to minimize the effects of surrounding light and provide the best view of the viewfinder image.
5.	Measurement/viewing selector	Moves internal mirror; set to ○ for measurement and to ● for viewing or for zero calibration.
6.	Lens-barrel locking screw	Locks lens barrel at a fixed position.
7.	Lens barrel	Can be moved back and forth to set measurement angle.
8.	Tripod socket	Can be used to mount measurement probe on a tripod. Depth: 6mm.
9.	ISO socket	Can be used to mount measurement probe. ISO Ø5mm, depth: 6mm
10.	Plug	Used to connect measuring probe to main unit or optional Multi-Probe Expansion Board.

Colour adjustment

ZERO CALIBRATION

Zero calibration is performed to determine the output of the measuring probe when no light reaches the sensor and to set this as the zero point to which all other measurements are referenced. Zero calibration must be performed after the POWER switch has been set ON brfore taking any measurements.

To perform zero calibration :

* Before performing zero calibration, check that the measuring probe has been connected to probe connector P1.

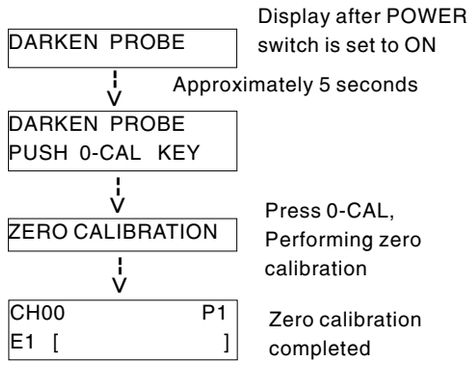
1. Check that the POWER switch is set to ON.

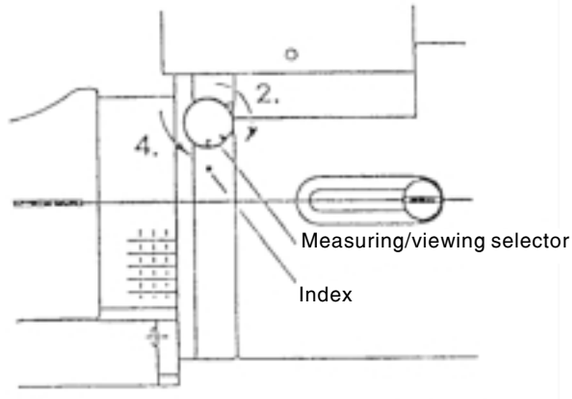
2. Set the measuring/viewing selector to the (viewing) position. (An image can be seen in the viewfinder, but no light will reach the sensor.)

3. Press 0-CAL.

   * If zero calibration is being performed immediately after the POWER switch has been set to ON, press 0-CAL after "PUSH 0-CAL KEY" appears in the liquid crystal display.

4. Set the measuring/viewing selector to the position. Measurements will be started immediately.





- "E1" will appear in the liquid crystal display the first time the CA-110 is used after shipment because no standard color has been set.
- Zero calibration can be performed at any time, even if "PUSH 0-CAL KEY" is not shown in the liquid crystal display.

Note:

- If the luminance of the LCD to be measured is 5.00cd/m² (1.46 fL) or less, wait at least five minutes after setting POWER switch to ON before performing zero calibration. Also, when measuring LCDs of low luminance, zero calibration should be performed approximately once an hour to ensure accuracy.
- If the ambient temperature changes after zero calibration has been performed, perform zero calibration again.
- Do not press any key while zero calibration is being performed. If a key is pressed, the time required for zero calibration will become longer.

To check if zero calibration was performed correctly, place the receptor area of the probe face down on a flat surface so that no light reaches the receptor area.

If the display shown at right appears in the liquid crystal display, perform zero calibration again.

```
OFFSET ERROR
PUSH 0-CAL KEY
```

- Even when "OFFSET ERROR" appears in the liquid crystal display, if light reaches the receptor area of the measuring probe, measured values will appear in the digital and analog displays. However, these values will not be accurate.

If any other display is shown, zero calibration was performed correctly.

Colour Adjustment

SETTING MEASUREMENT AREA

Measurement areas of Ø25mm and Ø50mm can be selected by extending or retracting the lens barrel. The Ø25mm measurement area can be used for measuring LCDs with 2 - inch or greater diagonals: the Ø50mm measurement area can be used for measuring LCDs with 4 - inch or greater diagonals.

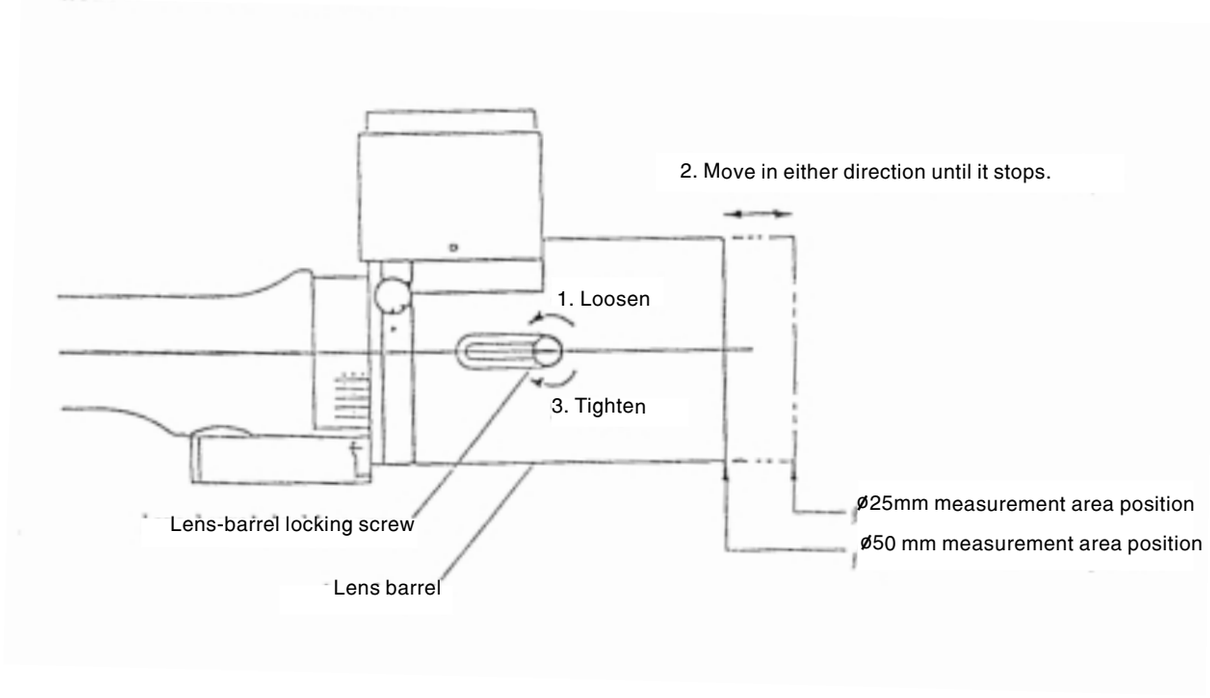
Set the measurement area :

Using a slotted screwdriver, loosen the lens - barrel locking screw.

Slide the lens barrel to the position corresponding to the desired measurement area. The lens barrel should be slid in the desired direction until it stops.
Extending the lens barrel fully sets the Ø25mm measurement area: retracting the lens barrel fully sets the Ø50mm measurement area.

Use the screwdriver to tighten the lens - barrel locking screw and lock the lens barrel in position.

Changing the measurement area also changes the measurement angle. this may result in differences between values measured with the Ø25mm measurement area and those measured with the Ø50mm measurement area to the viewing - angle characteristics of the LCD. For this reason. it is recommended that the measement area be constant for all measements.



Colour adjustment

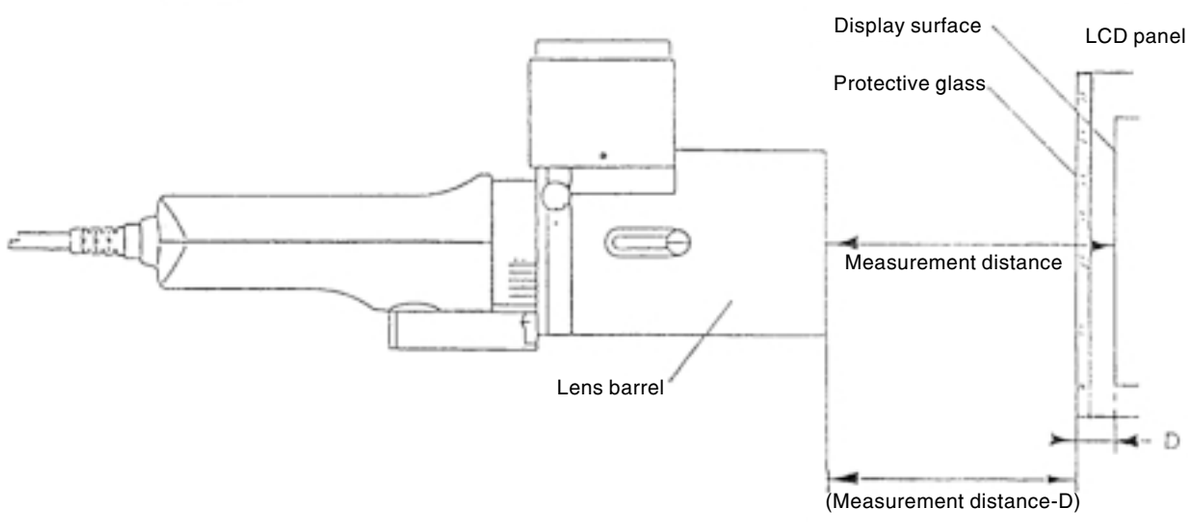
SETTING MEASUREMENT DISTANCE

The measurement distance (the distance from the front of the measuring probe's lens barrel to the display surface of the LCD) should be set using a ruler according to the procedure below.

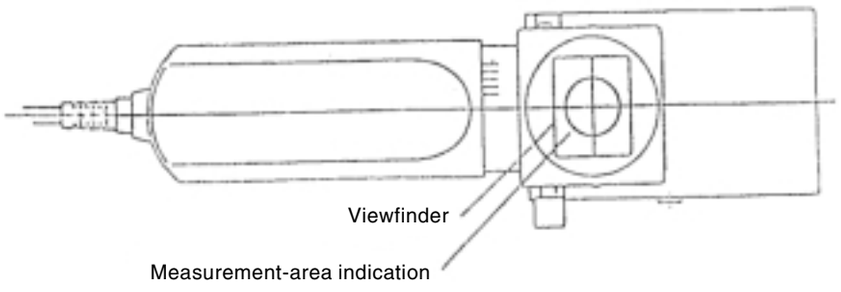
1. Mount the measuring probe on a tripod or other stand and mount the LCD on a suitable stand.
2. While using a ruler to measure the distance from the front of the measuring probe's lens barrel to the LCD's display surface, move the measuring probe or the LCD until the distance is the correct distance for the measurement area in use.

measurement area	ø 25mm	ø 50mm
measurement distance*	135mm+/-5mm	210mm+/-10mm

* Distance from the tip of the measuring probe's lens barrel to the LCD's display surface.



3. While looking through the viewfinder, move the measuring probe or LCD until the LCD section to be measured is inside the measurement-area indication in the viewfinder.



Colour Adjustment

White Balance Adjustment

Alignment procedure

1. Turn on 150S4 LCD monitor.
2. Turn on the Timing/Pattern generator. See Fig. 1
   Setting generator to provide CROSS-Hatch pattern at
   Resolution : 1024 x 768
   Timing : H= 48 KHz
   V= 60 Hz

3. Preset LCD colour Analyzer CA-110
   - Remove the lens protective cover of probe CA-A30.
   - Set Measuring/viewing selector to Measuring position for reset analyzer. (Zero calibration) as Fig. 2
   - Turn on the colour analyzer (CA-110).
   - Press 0-CAL button to starting reset analyzer . See Fig. 3

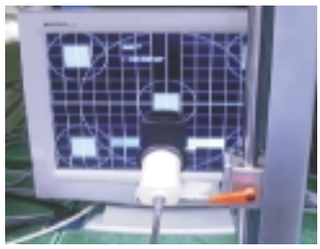


Fig. 1

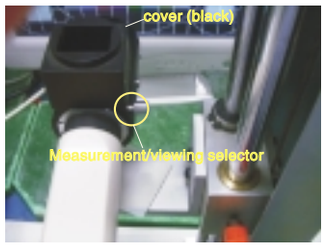


Fig. 2

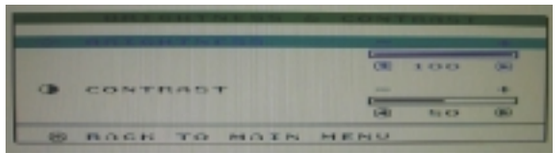
Fig. 3

4. Entering factory adjustment mode of LCD Monitor.
   - To hold and buttons then power on the monitor. Press to bring up OSD menu for confirmation.

Factory mode

Note : after alignment, please reset OSD to user s mode for normal operation. Otherwise, the monitor won t entering power saving mode and showing full white picture all the time as no video signal supplied. To leave factory mode by restart the monitor.

5. Adjust OSD menu to lower position of screen (i.e. adjust V-position to value 0 at submenu of OSD Setting.
6. Setting Brightness and Contrast
   - Adjust Brightness to value 70 .
   - Adjust Contrast to value 50 .



7. Switch light probe to V iewing position.
8. Move the Lens barrel forward or backward to get clear image as shown in Fig. 4
9. Switch light probe to Measuring position. It should be able to indicate colour value on the CA-110.

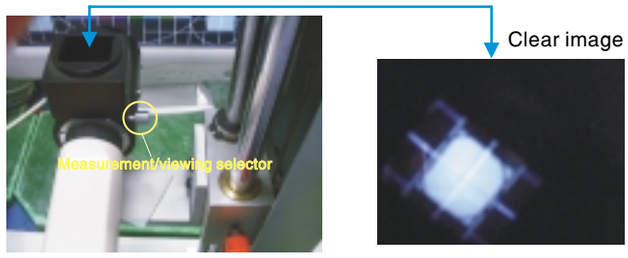
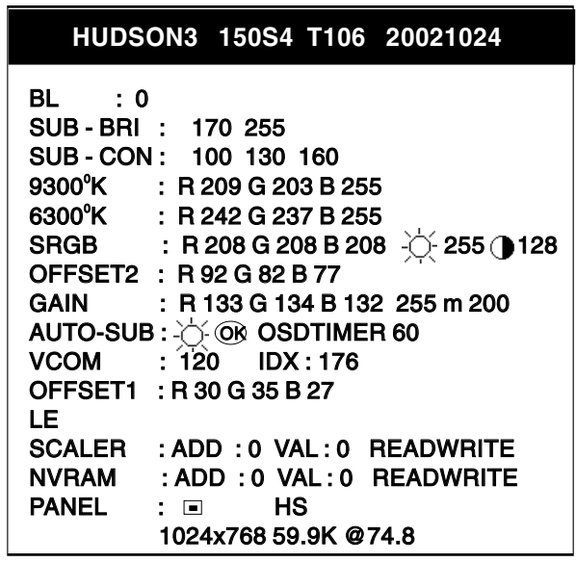


Fig. 4

10. Setting pattern to full white picture.
11. Press then select hudson3 150S4 t106 20021024 by button.
12. Press to bring up submenu as following windows.


HUDSON3 150S4 T106 20021024
BL : 0
SUB - BRI : 170 255
SUB - CON : 100 130 160
9300°K : R 209 G 203 B 255
6300°K : R 242 G 237 B 255
SRGB : R 208 G 208 B 208 255 128
OFFSET2 : R 92 G 82 B 77
GAIN : R 133 G 134 B 132 255 m 200
AUTO-SUB : OK OSDTIMER 60
VCOM : 120 IDX : 176
OFFSET1 : R 30 G 35 B 27
LE
SCALER : ADD : 0 VAL : 0 READWRITE
NVRAM : ADD : 0 VAL : 0 READWRITE
PANEL : HS
1024x768 59.9K @74.8

9300° K

13. Press or buttons to select R G B. Increase/decrease value by press or buttons until the X, Y co-ordinates as below:

x= 0.281 ±0.005
y= 0.311 ±0.005

Colour adjustment

6500° K
14. Setting X, Y value listed as below:

X= 0.312±0.005
Y= 0.338±0.005
Y>= 250 nits

Alignment hits: 1. R for x value , G for y value, B for Y value on the colour analyzer.
2. If the colour analyzer has been calibrated and preset colour temperature in it. Please switch to correct setting in accordance with colour settings.

15. Gray scale checking
- Switch Timing/pattern generator to
  Pattern: 32 gray scale
  Timing: 1024 X 768 60Hz 48KHz
- Setting both Brightness and Contrast to 50 (Value).
- Check black and white scale are visible clearly across the screen. See Fig. 1

Fig. 1

Note: The bright scale will be saturated, if Y is too large. The dark scale will be invisible, if Y is too small. Re-alignment or review procedure again to correct this.

Repair Tips

0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

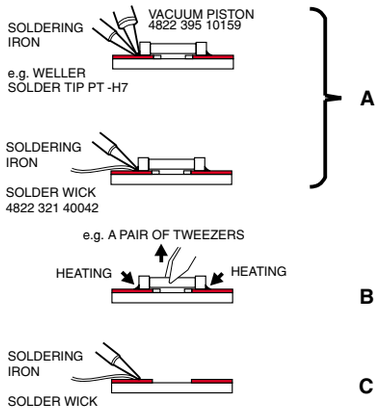
1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING



- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

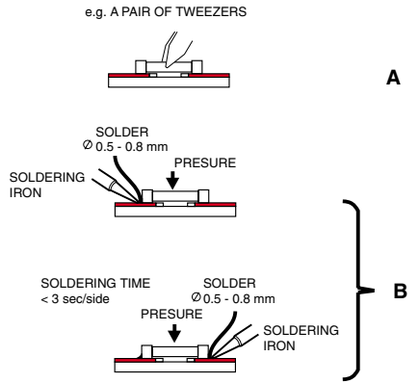
1.3 Caution on removal

- When handling the soldering.iron. use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig.2A).
- Next complete the soldering of the terminals of the component (see Fiq. 2B).

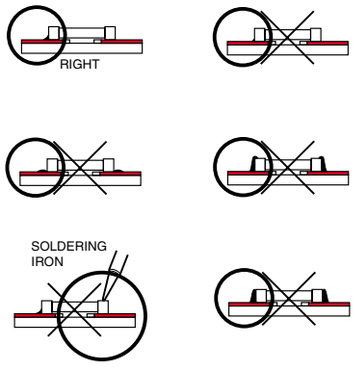
Fig. 2 MOUNTING



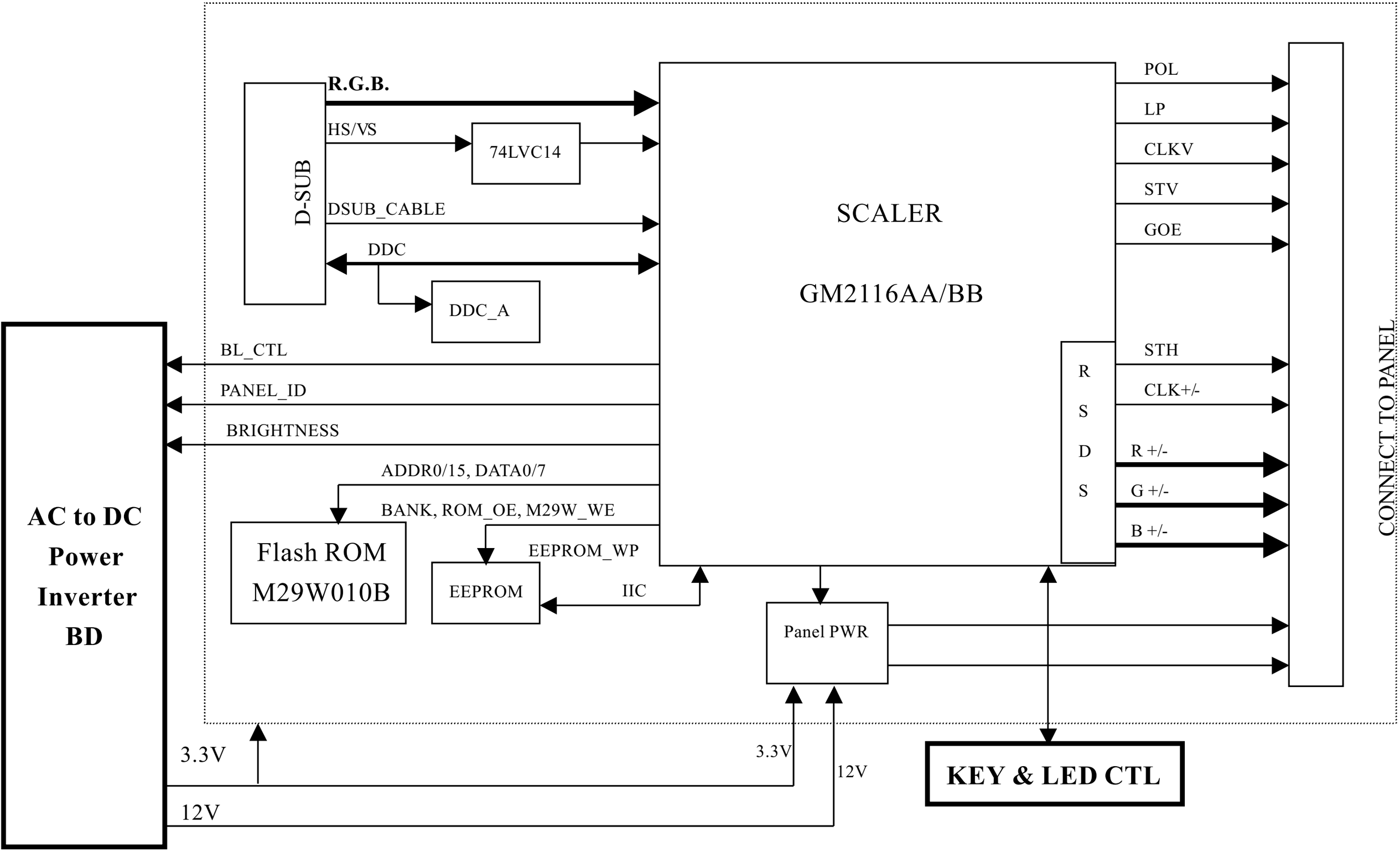
2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

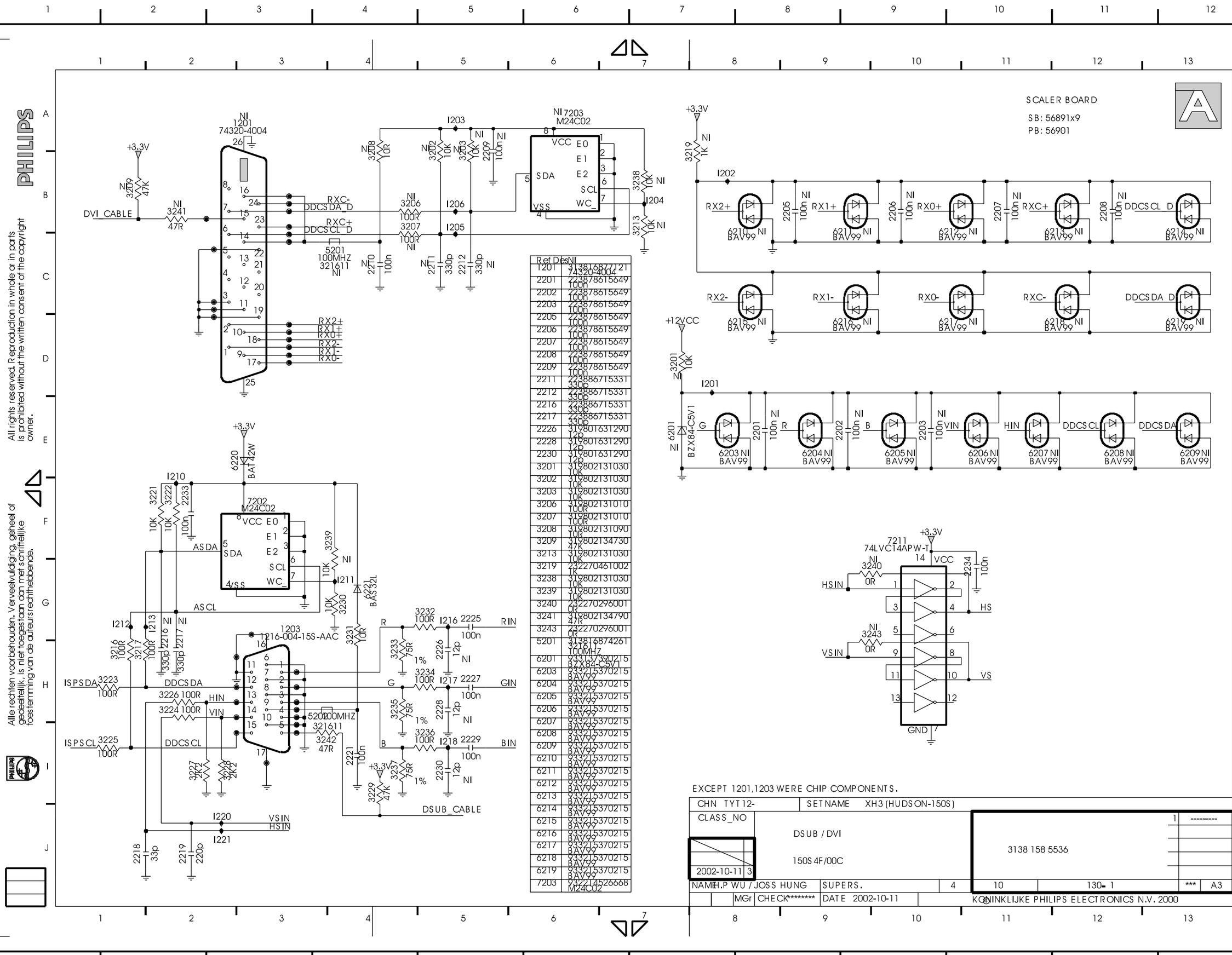
Fig. 3 Examples



Hudson3 150S4 Function Block



Block Diagram(DSUB/DVI)



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Ref Des	NI
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2202	223878615649 100n
2203	223878615649 100n
2205	223878615649 100n
2206	223878615649 100n
2207	223878615649 100n
2208	223878615649 100n
2209	223878615649 100n
2211	223886715331 330p
2212	223886715331 330p
2216	223886715331 330p
2217	223886715331 330p
2226	319801631290 12p
2228	319801631290 12p
2230	319801631290 12p
3201	319802131030 10K
3202	319802131030 10K
3203	319802131030 10K
3206	319802131010 100R
3207	319802131010 100R
3208	319802131090 10R
3209	319802134730 47K
3213	319802131030 10K
3219	232270461002 1K
3238	319802131030 10K
3239	319802131030 10K
3240	232270296001 0R
3241	319802134790 47K
3243	232270296001 0R
5201	313816874261 321611 100MHZ
6201	933137390215 BZX84-C5V1
6203	933215370215 BAV99
6204	933215370215 BAV99
6205	933215370215 BAV99
6206	933215370215 BAV99
6207	933215370215 BAV99
6208	933215370215 BAV99
6209	933215370215 BAV99
6210	933215370215 BAV99
6211	933215370215 BAV99
6212	933215370215 BAV99
6213	933215370215 BAV99
6214	933215370215 BAV99
6215	933215370215 BAV99
6216	933215370215 BAV99
6217	933215370215 BAV99
6218	933215370215 BAV99
6219	933215370215 BAV99
7203	935214526668 M24C02

1201 A2
1203 F3
2201 D8
2202 D8
2203 D9
2205 B8
2206 B9
2207 B10
2208 B11
2209 A5
2210 B4
2211 B5
2212 B5
2216 F2
2217 F2
2218 H2
2219 H2
2221 G4
2225 F5
2226 F5
2227 F5
2228 G5
2229 G5
2230 G5
2233 E2
2234 E10
3201 C7
3202 A5
3203 A5
3206 B4
3207 B4
3208 A4
3209 B2
3213 B7
3216 F2
3217 F2
3219 A7
3221 E2
3222 E2
3223 F2
3224 G2
3225 G2
3226 F2
3227 G2
3228 G3
3229 G4
3230 F4
3231 F4
3232 F5
3233 F4
3234 F5
3235 G4
3236 G5
3237 G4
3238 B7
3239 E4
3240 E9
3241 B2
3242 G4
3243 F9
5201 B4
5202 G4
6201 D7
6203 D7
6204 D8
6205 D9
6206 D9
6207 D10
6208 D11
6209 D11
6210 B7
6211 B8
6212 B9
6213 B10
6214 B11
6215 C7
6216 C8
6217 C9
6218 C10
6219 C11
6220 D3
6221 E4
7202 E3
7203 A6
7211 G9
I201 D7
I202 B7
I203 A5
I204 B7
I205 B5
I206 B5
I210 D2
I211 E4
I212 F2
I213 F2
I216 F5
I217 F5
I218 G5
I220 H3
I221 H3

Block diagram(ROM)

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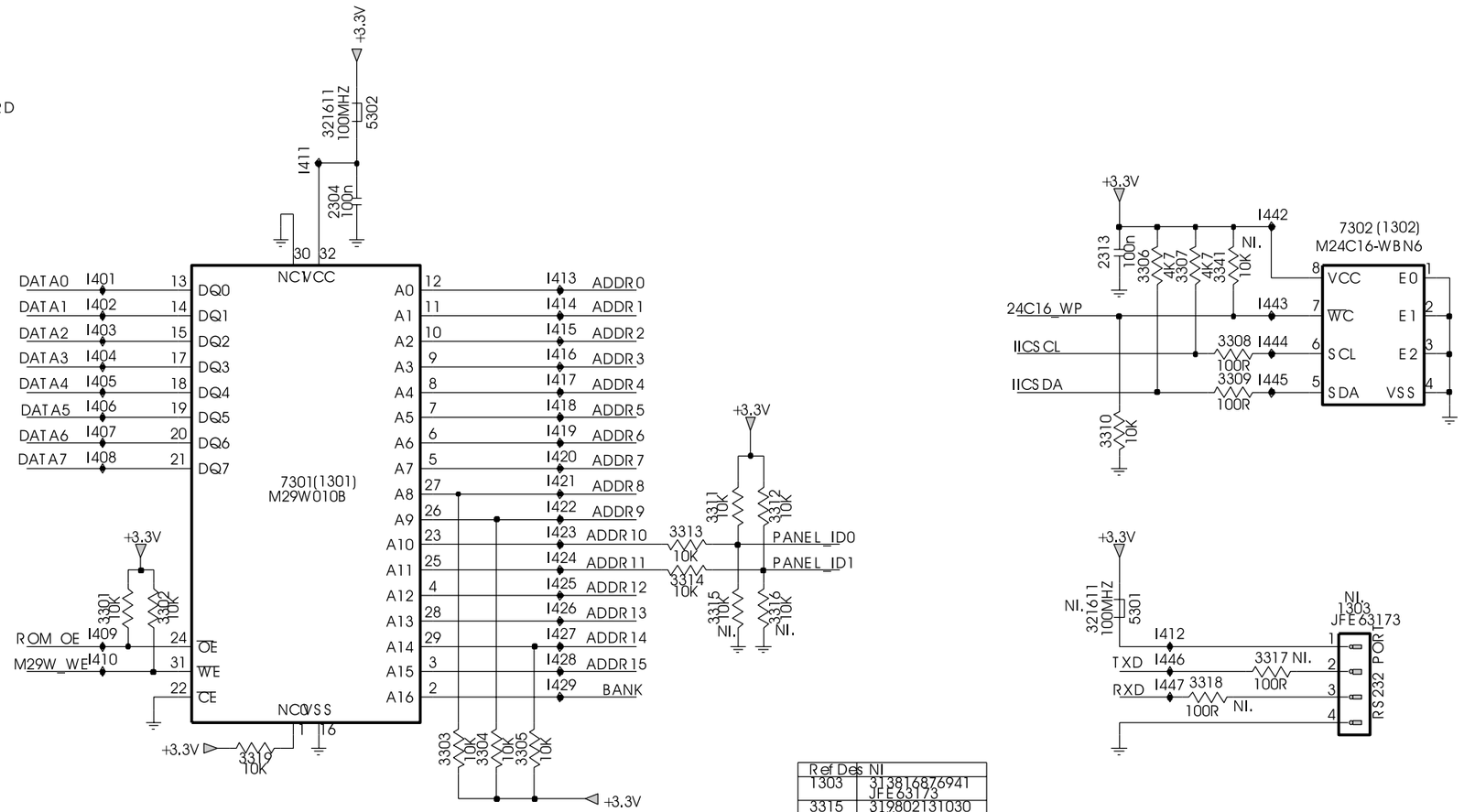
SCALER BOARD
SB: 56891x9
PB: 56901



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3316	319802131030 10K
3317	319802131010 100R
3318	319802131010 100R
3341	319802131030 10K
5301	313816874261 321611 100MHZ

EXCEPT 1303 WERE CHIP COMPONENTS.

CHN TYT12-		SETNAME XH3(HUDSON-150S)					
CLASS_NO	ROM				1	--------	
2002-10-11 3	150S4F/00C				3138 158 5536		
NAME H.P WU / JOSS HUNG		SUPERS.	4	10	130- 2	***	A3
	MGr	CHECK********	DATE 2002-10-11	KONINKLIJKE PHILIPS ELECTRONICS N.V. 2000			

Go to cover page

Block Diagram(Scaler)

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SCALER BOARD

SB: 56891x9

PB: 56901

7443

gm5116

gm 2116 for XGA

	AU	CPT	HS	LG
ID0	0	0	1	1
ID1	0	1	0	1

Ref Des	NI
2485	3198016333390 33p
3413	3198021310301 0K
3416	3198021322210 220R

CHN TYT12-	SETNAME XH3(HUDSON-150S)			
CLASS_NO	SCALER		3138 158 5536	1 --------
2002-10-11 3	150S4F/00C			
NAME H.P WU / JOSS HUNG	SUPERS.	4	10	130- 3 *** A3
MGr CHECK********	DATE 2002-10-11	KONINKLIJKE PHILIPS ELECTRONICS N.V. 2000		

1410 G9 F168 E11
1412 G12 F169 E11
2401 F2 F170 E11
2402 F2 F171 E11
2403 F3 F172 E11
2404 F3 F173 E11
2405 F3 F174 E11
2406 F3 F175 E11
2407 F3 F176 E11
2408 F2 F177 F11
2409 F2 F178 F11
2410 F2 F179 F11
2411 F3 F180 F11
2412 F3 F181 F11
2413 F2 F182 F11
2414 B5 F183 F11
2415 C5 F184 G11
2416 C5 F186 G11
2417 D4 F187 G11
2418 G10 F188 G11
2419 G9 F189 G11
2420 C5 F190 F11
2421 B10 I449 B4
2422 B10 I450 C4
2423 B10 I451 C4
2442 B2 I452 C5
2443 B2 I453 C5
2444 B2 I454 C5
2445 D2 I455 C5
2446 B3 I456 C5
2448 B2 I457 C5
2449 B2 I458 D5
2450 B3 I459 D5
2451 B3 I460 D5
2452 C4 I461 D5
2453 D1 I462 F10
2454 F2 I463 F5
2455 F2 I464 F9
2456 B2 I465 F10
2457 B2 I466 F11
2458 B2 I467 B9
2459 B2 I468 B9
2460 B2 I469 B9
2461 B2 I480 F9
2462 B3 I481 F9
2463 C2 I482 G5
2464 C2
2465 C2
2466 C2
2467 C2
2468 B2
2469 B3
2477 G10
2478 G11
2479 G11
2482 F2
2483 F2
2484 D4
2485 E4
3401 C4
3402 C4
3403 C4
3404 C4
3405 C4
3406 C5
3407 C4
3408 C4
3409 D4
3410 D4
3413 D4
3414 D4
3415 C4
3416 E4
3417 D4
3419 F5
3420 B10
3421 B10
3422 B10
3487 G11
3488 G11
3489 F11
3490 F11
3491 F11
5440 B2
5441 E2
5444 F2
5445 A2
5446 C2
5449 F10
5450 F11
6401 C4
7442 C2
7443 B7
F157 C11
F158 D11
F159 D11
F160 D11
F161 D11
F162 D11
F163 D11
F164 D11
F165 D11
F166 D11
F167 E11

Block diagram(Power)

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SCALER BOARD

SB: 56891x9
PB: 56901

1502
63390
TO POWER BD 8052
F064
F065
F066
F067
F068
F070
F072
F073
BRIGHTNESS
BL_CONTROL
PANEL_IDX
PWR_SAVING
5501
5503
100MHZ
32161
2501 100n
2502 100n
2534 47u
2505 100n
2506 100n
2536 47u
+12VCC
+3.3V

1503
JFE6339V
TO CONTROL BD 1712
F054
F055
F056
F057
F058
F059
F060
F061
F062
F063
3529 0R05
3501 100R I574 K_AUTO
3502 100R I575 K_OK
3503 100R I576 K_DOWN
3504 100R I578 K_UP
3505 100R I579 K_LEFT
3506 100R I580 K_RIGHT
3507 100R K_PWR
3510 100R PWR_SAVING
NI 3508 220R I582
3509 220R I583
2516 1n K_AUTO
2518 1n K_OK
2520 1n K_DOWN
2522 1n K_UP
2524 1n K_LEFT
2526 1n K_RIGHT
2528 1n K_PWR
2533 1n PWR_SAVING
NI 2530 1n
2532 1n

Ref Des	NI	
2533		223858615623 1n
3510		319802131010 100R

3531 10K
3532 10K
K_RIGHT
K_PWR
K_LEFT
K_UP
K_DOWN
K_OK
K_AUTO
+3.3V

7501 BC858C
7502 BC858C
I589 3527 10K LED_R
I590 3528 10K LED_G

7505 MUN2211J
7509 MUN2211J
PANEL_PWR
3537 3K3
3536 100K
3512 10K
3514 100K
I584
I577
2509 10n
2513 100n
7506 SI5441DC
7510 SI5441DC
G S D3 D4 D2 D5 D1 D6
P +3.3V
P +12V
3533 10K
3535 10K

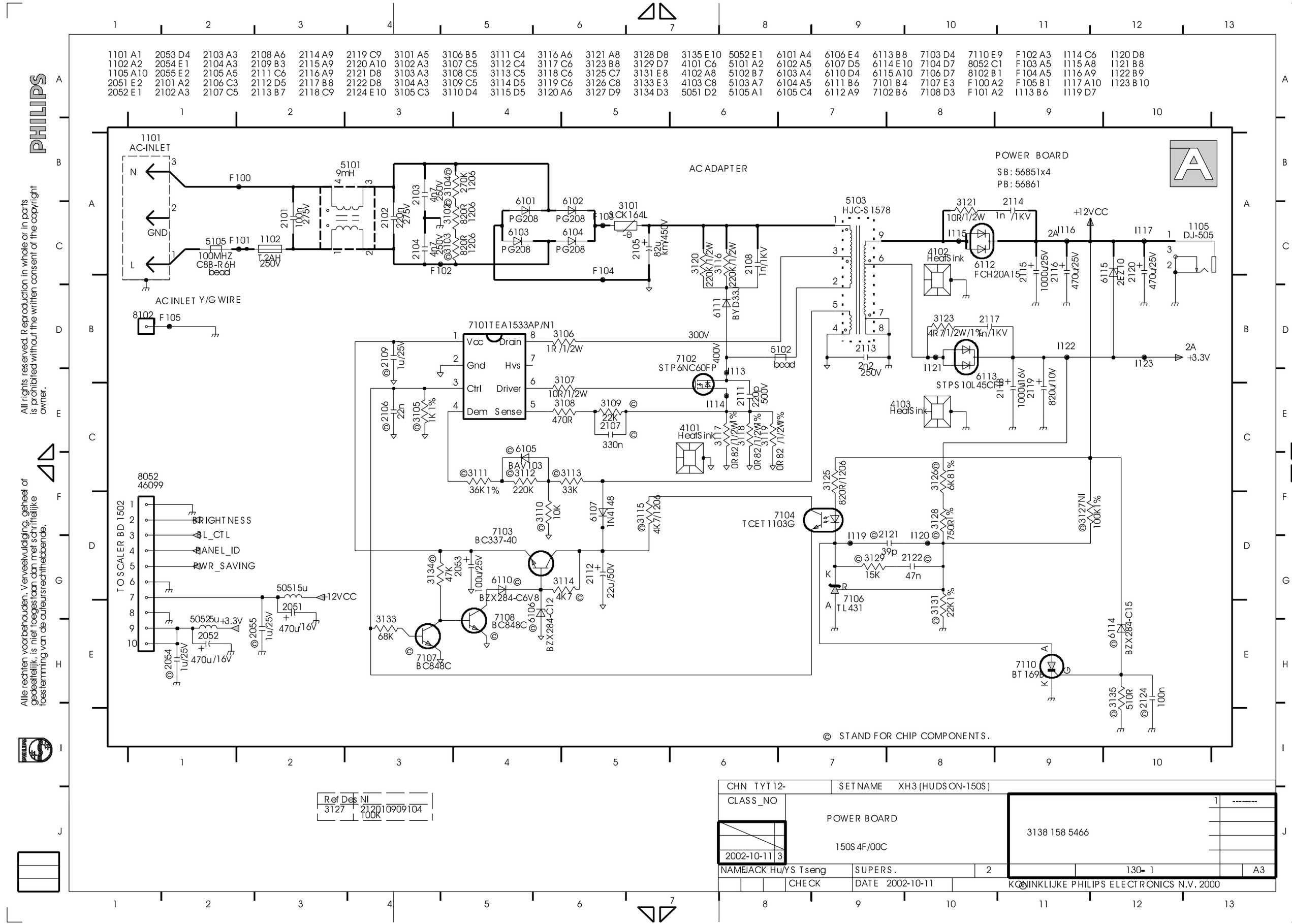
1502 A2 I577 D8
1503 C1 I578 D3
2501 B3 I579 D3
2502 B4 I580 D3
2505 B3 I582 E3
2506 B4 I583 E3
2509 A8 I584 A8
2513 D8 I589 E5
2516 C4 I590 E5
2518 C4
2520 C4
2522 D4
2524 D4
2526 D4
2528 E4
2530 E4
2532 E4
2533 E4
2534 B4
2536 B4
3501 C3
3502 C3
3503 C3
3504 D3
3505 D3
3506 D3
3507 D3
3508 E3
3509 E3
3510 E3
3512 A8
3514 D8
3527 E6
3528 E6
3529 D2
3531 B6
3532 C6
3533 B9
3535 E9
3536 D8
3537 A8
5501 A4
5503 B4
7501 E5
7502 E5
7505 A7
7506 A8
7509 D7
7510 D8
F054 C1
F055 C1
F056 C1
F057 D1
F058 D1
F059 D1
F060 D1
F061 D1
F062 D1
F063 E1
F064 A3
F065 A3
F066 A3
F067 A3
F068 A3
F070 A3
F072 B3
F073 B3
I574 C3
I575 C3
I576 C3

EXCEPT 1502,1503 WERE CHIP COMPONENTS.

CHN TYT12-	SETNAME XH3(HUDSON-150S)		
CLASS_NO	POWER	3138 158 5536	1 --------
2002-10-11 3	150S4F/00C		
NAME H.P WU / JOSS HUNG	SUPERS. 4	130- 4	A3
	CHECK DATE 2002-10-11	KONINKLIJKE PHILIPS ELECTRONICS N.V. 2000	

Go to cover page

Block Diagram(Power board)



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Block diagram(Power board_B)

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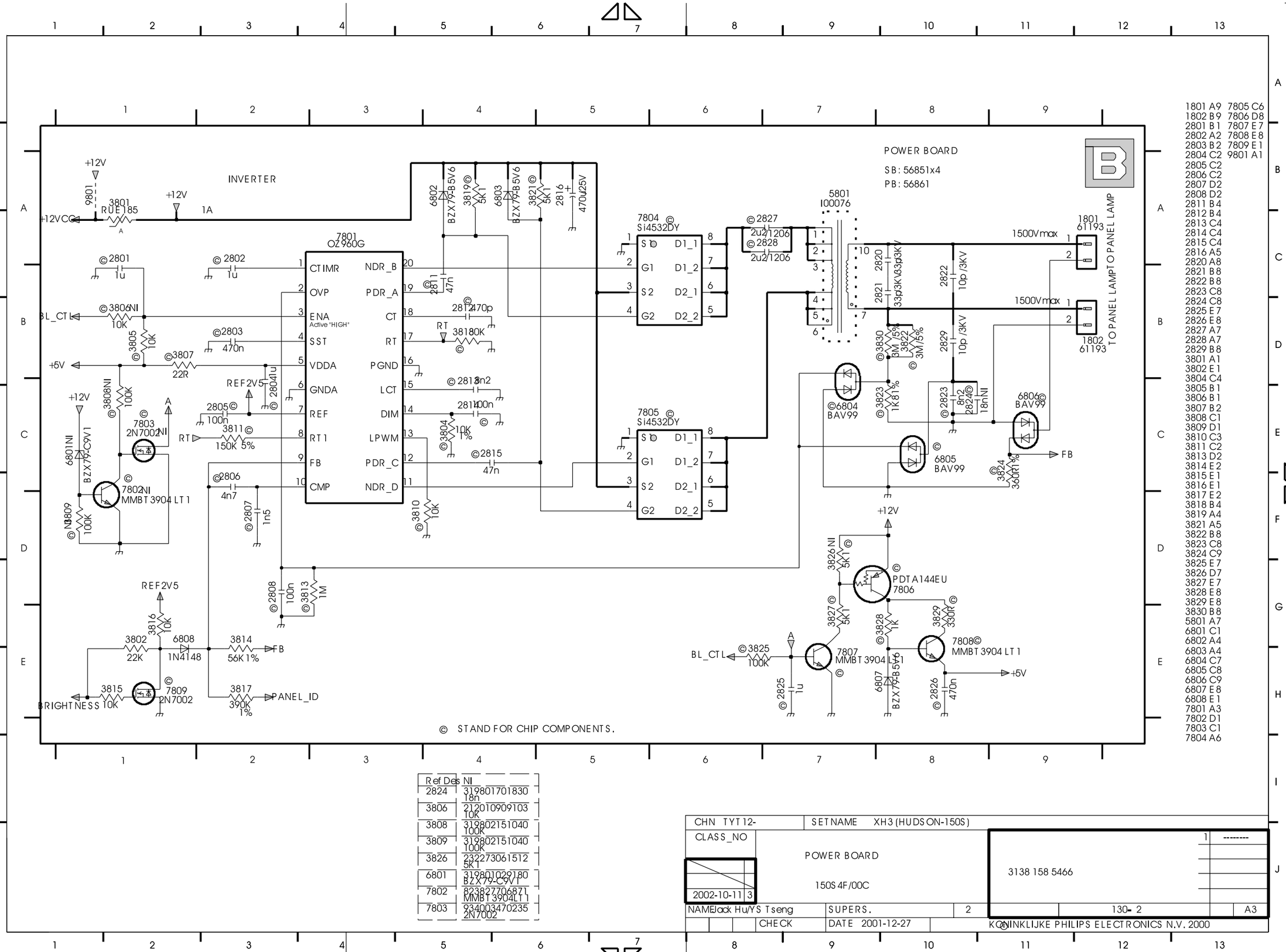


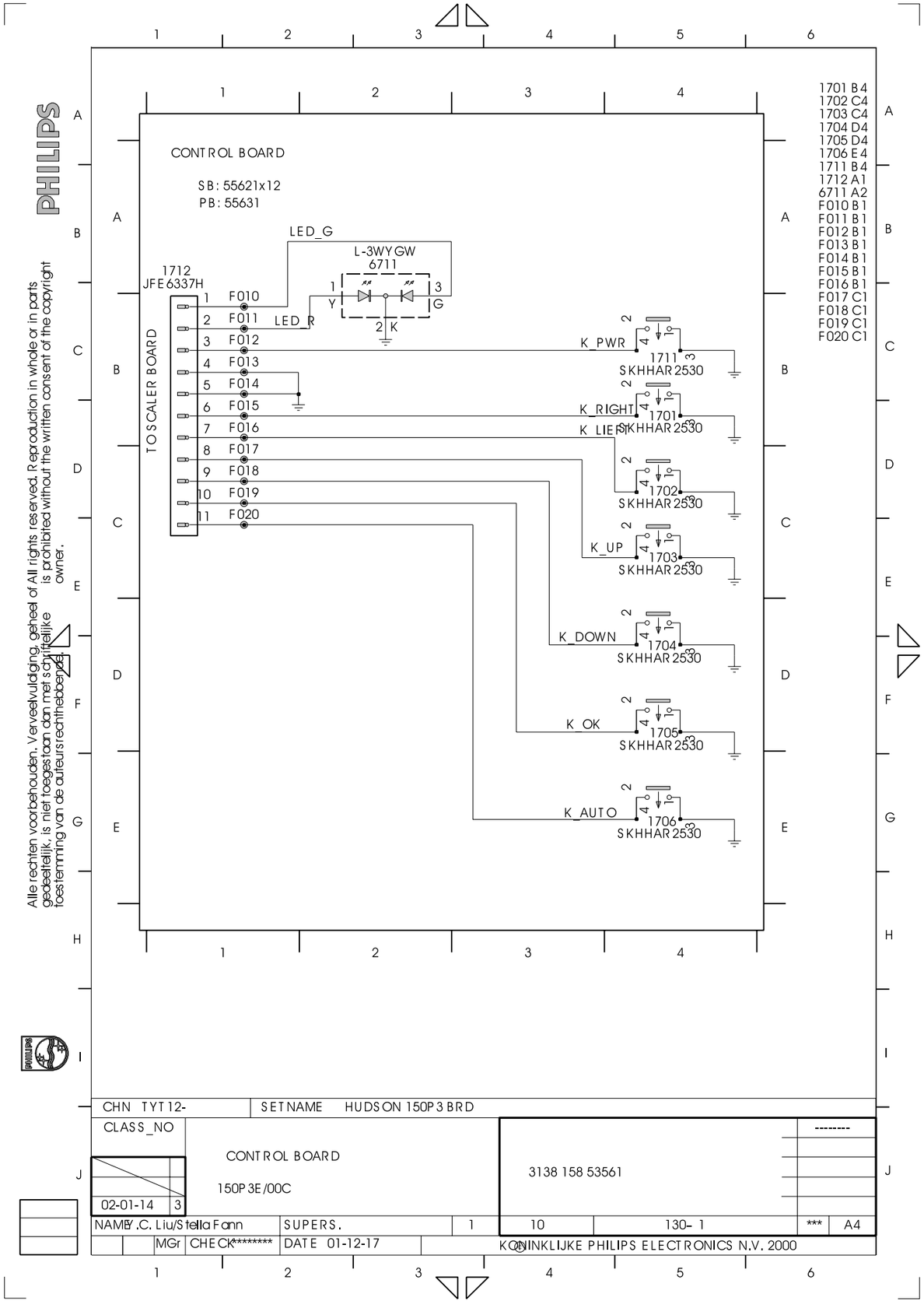
Ref Des	NI	
2824	3198017018	30 18n
3806	2120109091	03 10K
3808	3198021510	40 100K
3809	3198021510	40 100K
3826	2322730615	12 5K1
6801	3198010291	80 BZX79-C9V1
7802	8233277068	71 MMBT3904LT1
7803	9340034702	35 2N7002

CHN TYT12-	SETNAME XH3 (HUDSON-150S)		
CLASS_NO	POWER BOARD	3138 158 5466	1 --------
2002-10-11 3	150S 4F/00C		
NAMEJack Hu/YS Tseng	SUPERS.	2	130- 2 A3
CHECK	DATE 2001-12-27	KONINKLIJKE PHILIPS ELECTRONICS N.V. 2000	

1801 A9 7805 C6
1802 B9 7806 D8
2801 B1 7807 E7
2802 A2 7808 E8
2803 B2 7809 E1
2804 C2 9801 A1
2805 C2
2806 C2
2807 D2
2808 D2
2811 B4
2812 B4
2813 C4
2814 C4
2815 C4
2816 A5
2820 A8
2821 B8
2822 B8
2823 C8
2824 C8
2825 E7
2826 E8
2827 A7
2828 A7
2829 B8
3801 A1
3802 E1
3804 C4
3805 B1
3806 B1
3807 B2
3808 C1
3809 D1
3810 C3
3811 C2
3813 D2
3814 E2
3815 E1
3816 E1
3817 E2
3818 B4
3819 A4
3821 A5
3822 B8
3823 C8
3824 C9
3825 E7
3826 D7
3827 E7
3828 E8
3829 E8
3830 B8
5801 A7
6801 C1
6802 A4
6803 A4
6804 C7
6805 C8
6806 C9
6807 E8
6808 E1
7801 A3
7802 D1
7803 C1
7804 A6

Go to cover page

Block Diagram(Control board)



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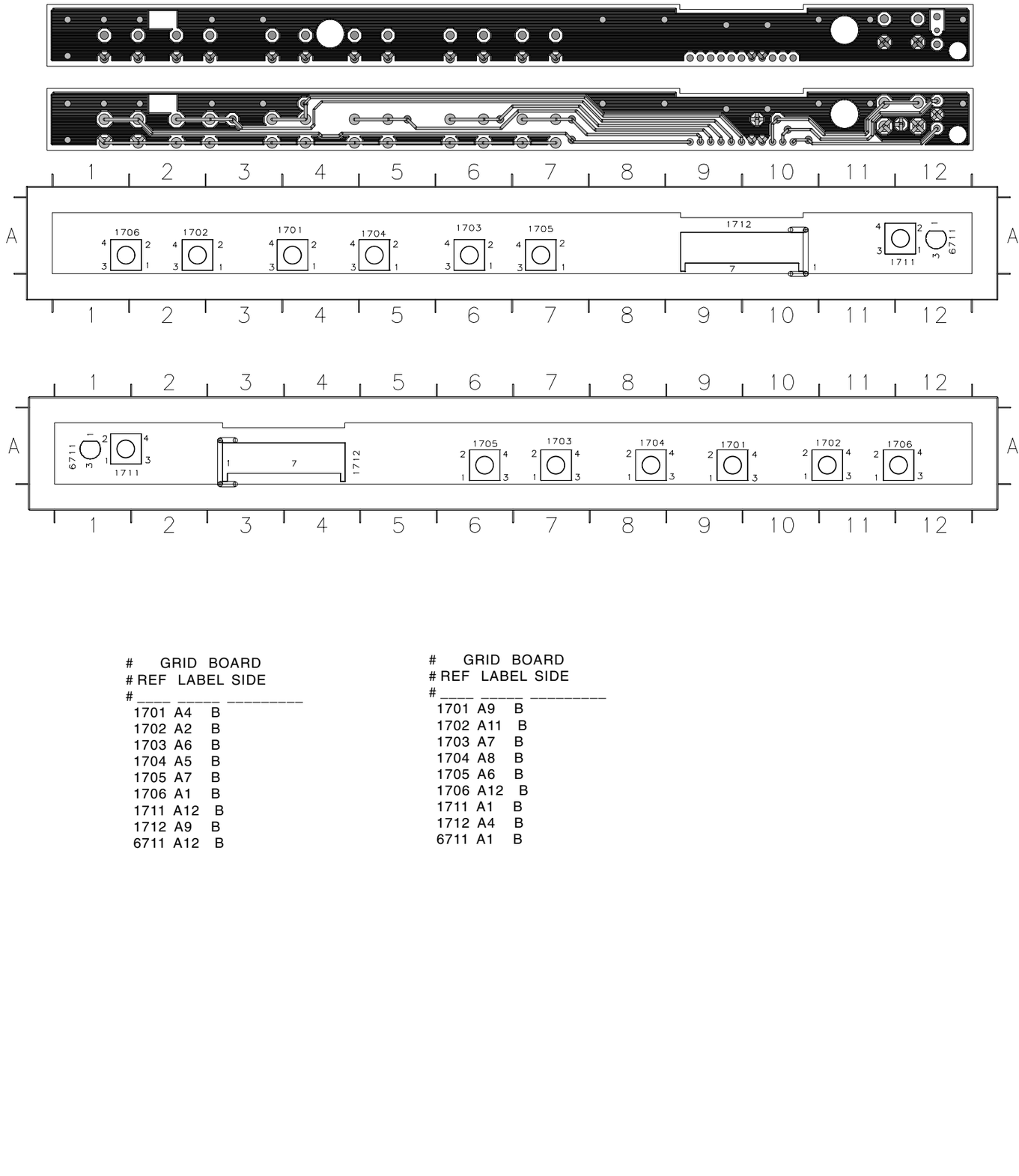
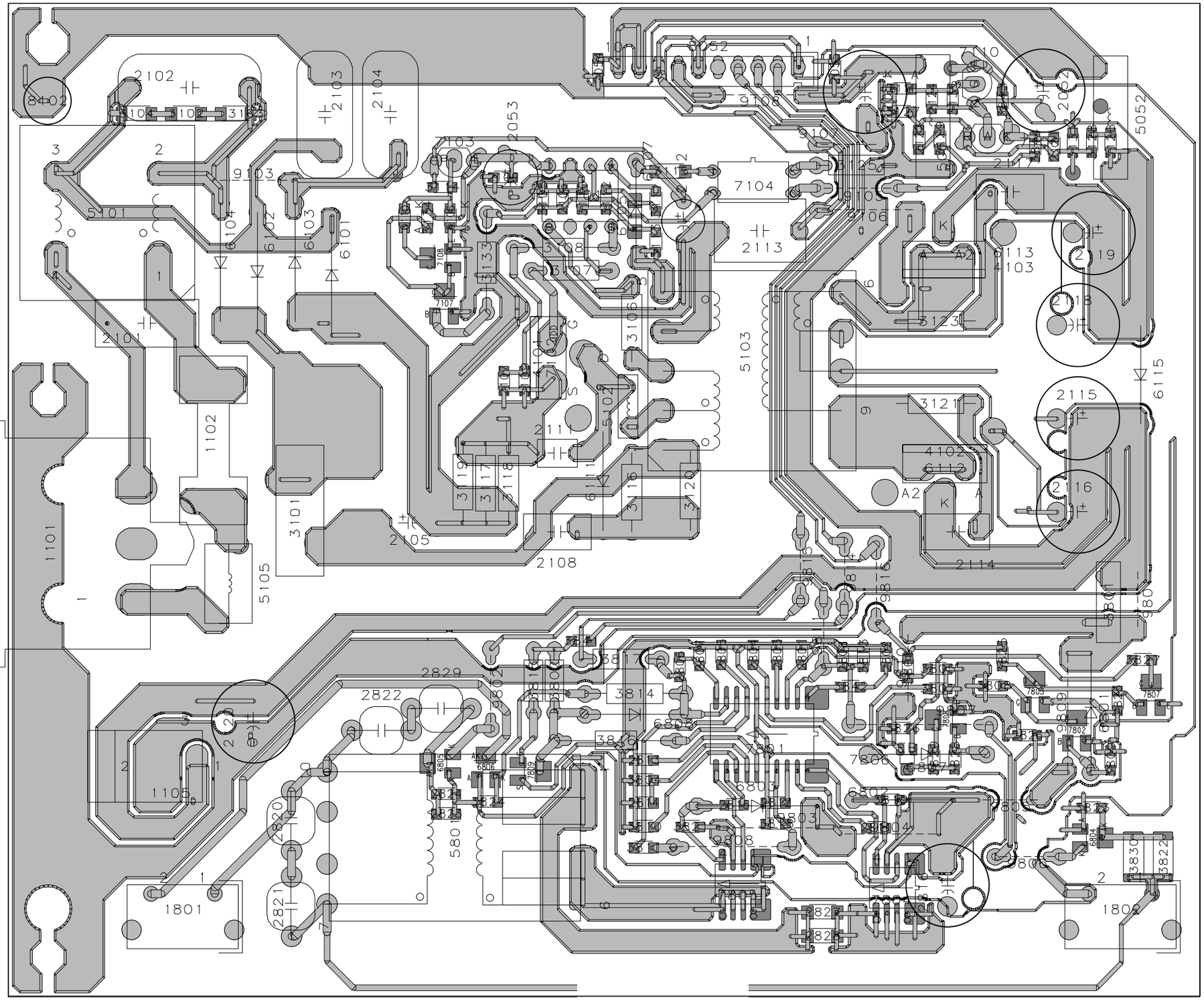


# REF	GRID	BOARD SIDE
1701	A4	B
1702	A2	B
1703	A6	B
1704	A5	B
1705	A7	B
1706	A1	B
1711	A12	B
1712	A9	B
6711	A12	B

# REF	GRID	BOARD SIDE
1701	A9	B
1702	A11	B
1703	A7	B
1704	A8	B
1705	A6	B
1706	A12	B
1711	A1	B
1712	A4	B
6711	A1	B

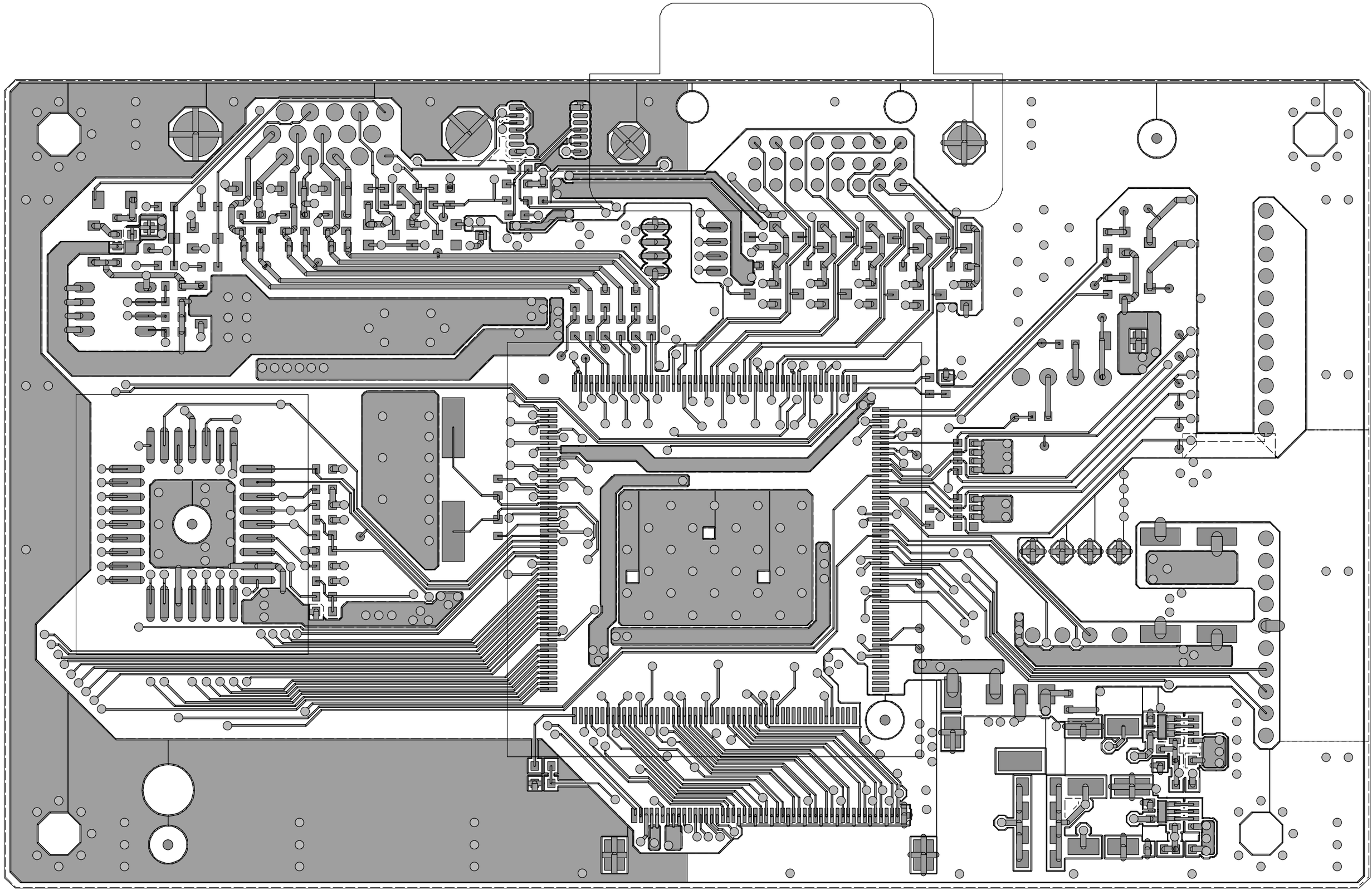
Go to cover page

Power Board C.B.A.

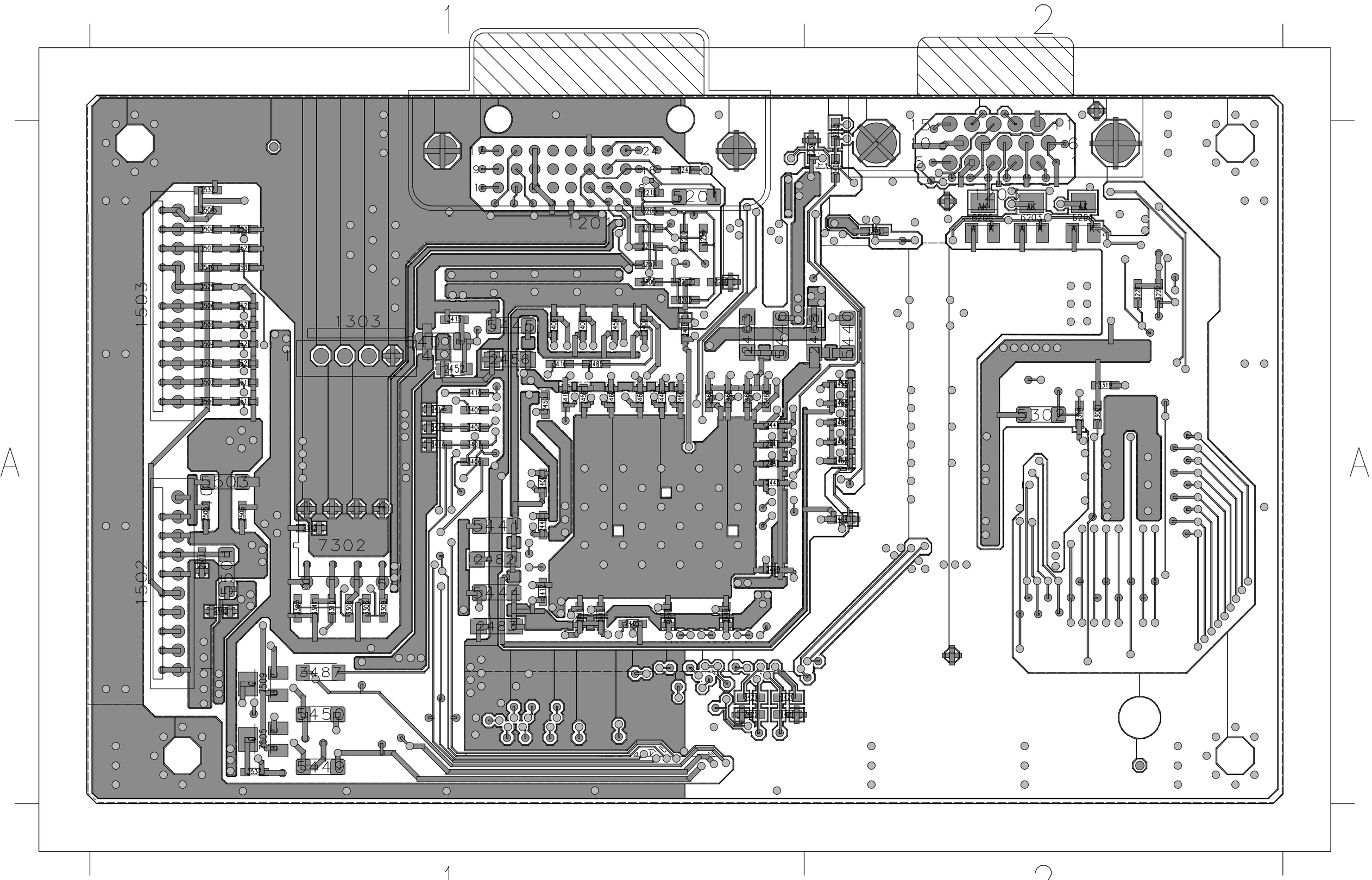


GRID REF	BOARD LABEL	SIDE
1101	A1	B
1102	A1	B
1105	B1	B
1801	B1	B
1802	B3	B
2051	A3	B
2052	A3	B
2053	A2	B
2101	A1	B
2102	A1	B
2103	A1	B
2104	A1	B
2105	A2	B
2108	A2	B
2111	A2	B
2112	A2	B
2113	A2	B
2114	A3	B
2115	A3	B
2116	A3	B
2117	A3	B
2118	A3	B
2119	A3	B
2120	B1	B
2816	B3	B
2820	B1	B
2821	B1	B
2822	B1	B
2829	B2	B
3101	A1	B
3106	A2	B
3107	A2	B
3108	A2	B
3116	A2	B
3117	A2	B
3118	A2	B
3119	A2	B
3120	A2	B
3121	A3	B
3123	A3	B
3125	A3	B
3133	A2	B
3801	B3	B
3802	B2	B
3814	B2	B
3815	B2	B
3816	B2	B
3817	B2	B
4101	A2	B
4102	A3	B
4103	A3	B
5051	A3	B
5052	A3	B
5101	A1	B
5102	A2	B
5103	A2	B
5105	A1	B
5801	B2	B
6101	A1	B
6102	A1	B
6103	A1	B
6104	A1	B
6107	A2	B
6111	A2	B
6112	A3	B
6113	A3	B
6115	A3	B
6801	B3	B
6802	B3	B
6803	B2	B
6807	B3	B
6808	B2	B
7101	A2	B
7102	A2	B
7103	A2	B
7104	A2	B
7106	A3	B
7110	A3	B
8052	A2	B
8102	A1	B
9103	A1	B
9105	A3	B
9106	A3	B
9107	A3	B
9108	A2	B
9801	A3	B
9802	B2	B
9803	B2	B
9804	B3	B
9805	B3	B
9806	B3	B
9807	B3	B
9808	B2	B
9809	B3	B
9810	B3	B
9811	B3	B
9814	A3	B
9815	A3	B
9816	A3	B
7108	A2	A
7801	B2	A
7802	B3	A
7803	B3	A
7804	B3	A
7805	B2	A
7806	B3	A
7807	B3	A
7808	B3	A
7809	B2	A
2054	A2	A
2055	A3	A
2106	A2	A
2107	A2	A
2109	A2	A
2121	A3	A
2122	A3	A
2124	A3	A
2801	B2	A
2802	B3	A
2803	B2	A
2804	B2	A
2805	B2	A
2806	B2	A
2807	B2	A
2808	B3	A
2811	B3	A
2812	B2	A
2813	B2	A
2814	B2	A
2815	B2	A
2823	B2	A
2824	B2	A
2825	B3	A
2826	B3	A
2827	B3	A
2828	B3	A
3102	A1	A
3103	A1	A
3104	A1	A
3105	A2	A
3109	A2	A
3110	A2	A
3111	A2	A
3112	A2	A
3113	A2	A
3114	A2	A
3115	A2	A
3126	A3	A
3127	A3	A
3128	A3	A
3129	A3	A
3131	A3	A
3134	A2	A
3135	A3	A
3804	B2	A
3805	B3	A
3806	B3	A
3807	B3	A
3808	B3	A
3809	B3	A
3810	B2	A
3811	B2	A
3813	B3	A
3818	B2	A
3819	B3	A
3821	B2	A
3822	B3	A
3823	B3	A
3824	B2	A
3825	B3	A
3826	B3	A
3827	B3	A
3828	B3	A
3829	B3	A
3830	B3	A
3841	B2	A
3842	B3	A
3843	A3	A
3844	A3	A
6105	A2	A
6106	A2	A
6110	A1	A
6114	A3	A
6804	B3	A
6805	B2	A
6806	B2	A
7107	A2	A

Block Diagram(Scaler C.B.A)



Solder side(C.B.A)



Component side

GRID REF	BOARD LABEL	SIDE
1201	A2	B
1203	A1	B
1303	A2	B
1502	A2	B
1503	A2	B
7302	A2	B

GRID REF	BOARD LABEL	SIDE
1410	A1	B
1412	A2	B
2201	A1	B
2202	A1	B
2203	A1	B
2205	A2	B
2206	A2	B
2207	A2	B
2208	A2	B
2216	A1	B
2217	A1	B
2218	A1	B
2219	A1	B
2221	A1	B
2225	A2	B
2226	A1	B
2227	A2	B
2228	A1	B
2229	A2	B
2230	A1	B
2233	A1	B
2414	A2	B
2415	A2	B
2416	A2	B
2418	A1	B
2419	A1	B
2420	A2	B
2423	A1	B
2445	A2	B
2453	A2	B
2477	A2	B
2478	A2	B
2479	A2	B
2484	A2	B
2509	A2	B
2513	A2	B
2534	A2	B
2536	A2	B
3209	A1	B
3216	A1	B
3217	A1	B
3219	A2	B
3223	A1	B
3224	A1	B
3225	A1	B
3226	A1	B
3227	A1	B
3228	A1	B
3229	A1	B
3230	A1	B
3231	A1	B
3232	A1	B
3233	A1	B
3234	A1	B
3235	A1	B
3236	A1	B
3237	A1	B
3239	A1	B
3240	A1	B
3242	A1	B
3301	A1	B
3303	A1	B
3304	A1	B
3305	A1	B
3311	A1	B
3312	A1	B
3313	A1	B
3314	A1	B
3315	A1	B
3316	A1	B
3317	A2	B
3318	A2	B
3401	A2	B
3402	A2	B
3403	A2	B
3404	A1	B
3417	A2	B
3422	A1	B
3488	A2	B
3489	A2	B
3490	A2	B
3491	A2	B
3512	A2	B
3514	A2	B
3527	A2	B
3528	A2	B
3531	A2	B
3532	A2	B
3533	A2	B
3535	A2	B
3536	A2	B
5202	A1	B
5301	A2	B
6201	A1	B
6206	A1	B
6207	A1	B
6208	A1	B
6209	A1	B
6210	A2	B
6211	A2	B
6212	A2	B
6213	A2	B
6214	A2	B
6215	A2	B
6216	A2	B
6217	A2	B
6218	A2	B
6219	A2	B
6220	A1	B
6221	A1	B
7202	A1	B
7203	A2	B
7211	A2	B
7301	A1	B
7442	A2	B
7443	A2	B
7501	A2	B
7502	A2	B
7506	A2	B
7510	A2	B

Solder side

GRID REF	BOARD LABEL	SIDE
1201	A1	B
1203	A2	B
1303	A1	B
1502	A1	B
1503	A1	B
7302	A1	B

GRID REF	BOARD LABEL	SIDE
2209	A1	A
2210	A1	A
2211	A1	A
2212	A1	A
2234	A2	A
2304	A2	A
2313	A1	A
2401	A1	A
2402	A1	A
2403	A2	A
2404	A2	A
2405	A1	A
2406	A1	A
2407	A1	A
2408	A1	A
2409	A1	A
2410	A1	A
2411	A1	A
2412	A1	A
2413	A1	A
2417	A1	A
2421	A1	A
2422	A1	A
2442	A1	A
2443	A1	A
2444	A1	A
2446	A1	A
2448	A1	A
2449	A1	A
2450	A1	A
2451	A1	A
2452	A1	A
2454	A1	A
2455	A2	A
2456	A1	A
2457	A2	A
2458	A2	A
2459	A1	A
2460	A1	A
2461	A1	A
2462	A1	A
2463	A1	A
2464	A1	A
2465	A1	A
2466	A1	A
2467	A1	A
2468	A2	A
2469	A2	A
2482	A1	A
2483	A1	A
2485	A1	A
2501	A1	A
2502	A1	A
2505	A1	A
2506	A1	A
2516	A1	A
2518	A1	A
2520	A1	A
2522	A1	A
2524	A1	A
2526	A1	A
2528	A1	A
2530	A1	A
2532	A1	A
2533	A1	A
3201	A2	A
3202	A1	A
3203	A1	A
3206	A1	A
3207	A1	A
3208	A1	A
3213	A1	A
3221	A2	A
3222	A2	A
3238	A1	A
3241	A1	A
3243	A2	A
3302	A2	A
3306	A1	A
3307	A1	A
3308	A1	A
3309	A1	A
3310	A1	A
3319	A2	A
3341	A1	A
3405	A2	A
3406	A1	A
3407	A1	A
3408	A1	A
3409	A1	A
3410	A1	A
3413	A1	A
3414	A1	A
3415	A1	A
3416	A1	A
3419	A1	A
3420	A1	A
3421	A1	A
3487	A1	A
3501	A1	A
3502	A1	A
3503	A1	A
3504	A1	A
3505	A1	A
3506	A1	A
3507	A1	A
3508	A1	A
3509	A1	A
3510	A1	A
3529	A1	A
3537	A1	A
5201	A1	A
5302	A2	A
5440	A2	A
5441	A1	A
5444	A1	A
5445	A1	A
5446	A1	A
5449	A1	A
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5501	A1	A
5503	A1	A
6203	A2	A
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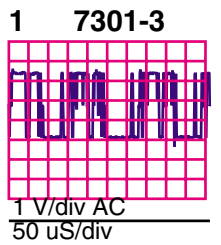
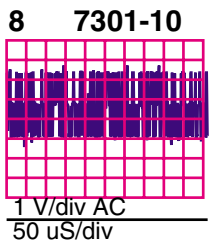
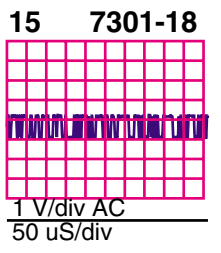
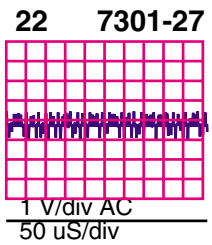
6401	A1	A
7505	A1	A
7509	A1	A

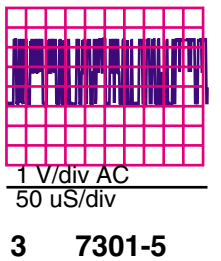
ROM WAVE FORM

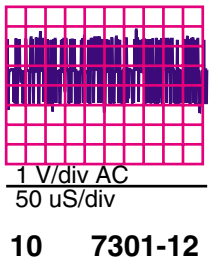


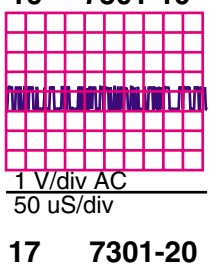


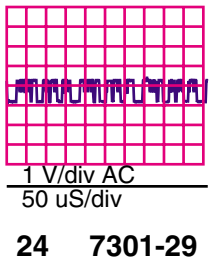


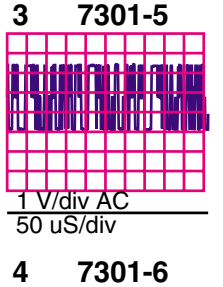


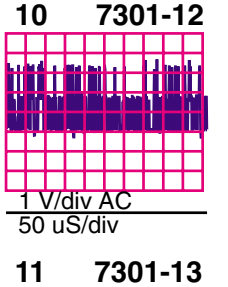


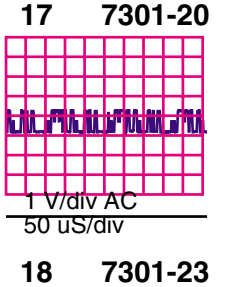


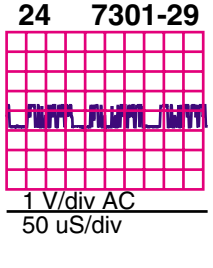


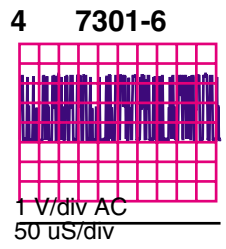


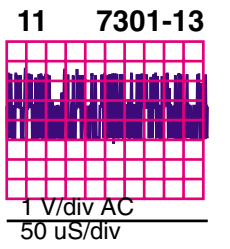


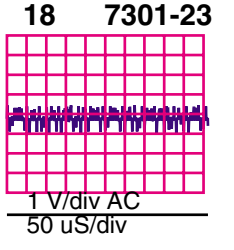


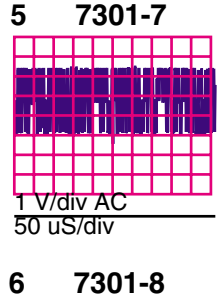


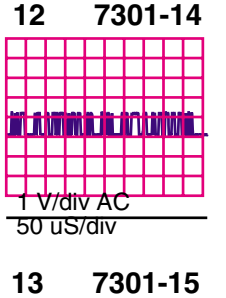


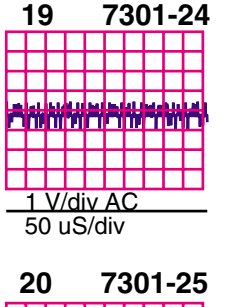


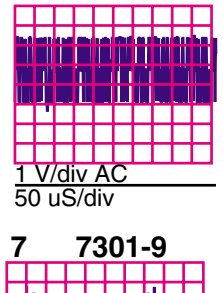


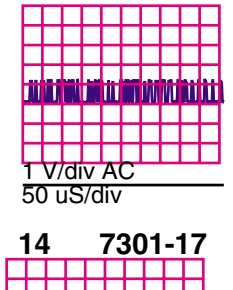


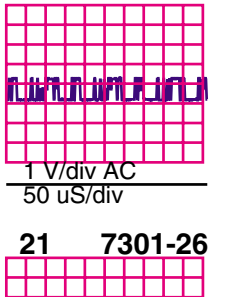


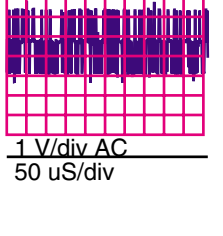


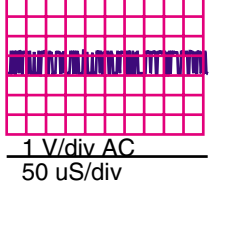


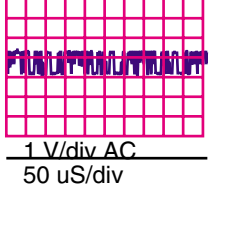




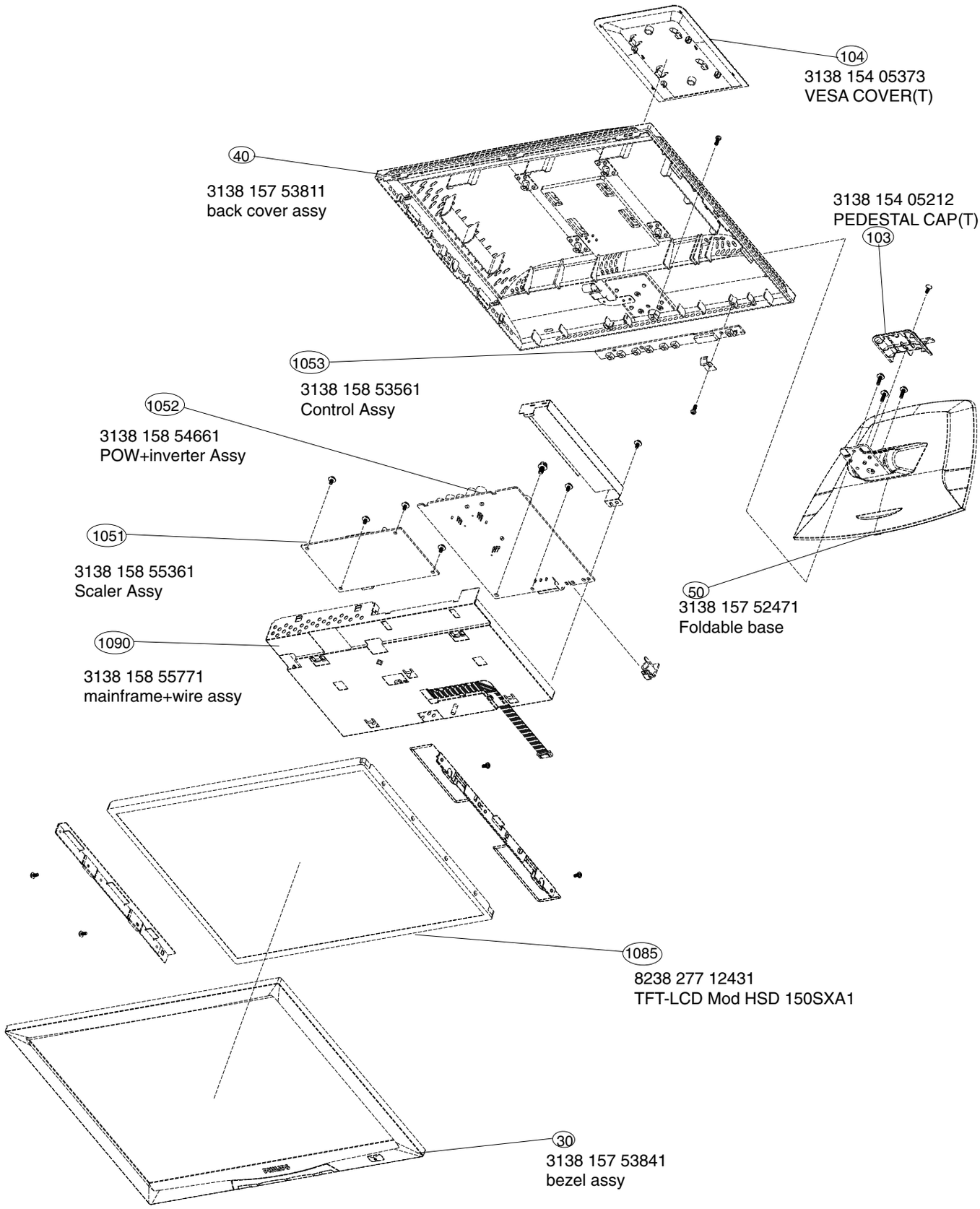








Exploded View



Go to cover page

Recommended Parts List

Model: 150S4FG/00C

Item	Code Number	Description
30	313815753841	BEZEL ASSY-150S4(T)
40	313815753811	BACK COVER ASSY-150S4
50	313815752471	FOLDABLE BASE
104	313815405373	VESA COVER(T)
450	313815633861	CARTON-150S4F
451	313815633921	CUSHION-R-150S4F
452	313815633931	CUSHION-L-150S4F
453	313815620612	P.E.BAG-ANTI-STAT.
601	313811704751	E-D.F.U. ASSY-150S4F
1086	313818875651	FFC50/90/50 61509
1087▲	3138 16874231	MAINS CORD
1088	313818872732	CORD SUB-D 15/1M8/15 SUB-D(I/F Cable)
1102▲	242208600266	FUSE 5X20 HT 2A/250V IEC
6112	932214337687	DIO REC FCH20A15(NIEC)L
6113	932219202687	DIO REC STPS10L45CFP(ST00)L
7101	935270037112	TEA1533AP/N1
7102	932215101687	TRANS STP6NC60FP
7104	932214014667	PHOTOCOUPLER TCET1103G 4P
7106	933771100686	IC TL431CLPRP 3P
7301	932217946682	IC M29W010B-90K1
7442	932218206685	IC SM IRU1206-25CY
7443	823827712691	GM2116AA
7801	823827712661	IC OZ960G
7510	932216638668	TRANS.SI5441DC
	313810610242	7302 eeprom assy
	313810610241	7301 Flash rom + Hex file

CTV :150S4FG/00C

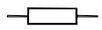
0030 313815753841 BEZEL ASSY-150S4(T)
0031 313815405712 BEZEL(T PC+ABS)
0032 313815406162 BUTTON-POWER(T)
0033 313815406141 BUTTON-CONTROL(T)
0040 313815753811 BACK COVER ASSY-150S4
0041 313815407491 BACK COVER(T PC+ABC)
0042 313815132072 BRACKET-REAR
0043 313815133171 VESA STRIP
0044 313815320601 INSULATING PLATE
0050 313815752471 FOLDABLE BASE(T)
0051 313815405203 PEDESTAL BASE(T)
0100 313815133061 SHIELDING INVERTER
0102 313815160931 CONTACT SPRING-HANNSTAR(S)
0103 313815405212 PEDESTAL CAP(T)
0104 313815405373 VESA COVER(T)
0108 313815133071 SIDE STRIP-R-HS
0109 313815133081 SIDE STRIP-L-HS
0129 313810632613 PE BAG
0140 313800990021 PROCESS BOX
0141 313815521611 QUICK SETUP GUIDE(150S4F)
0142 313815520597 MANUAL - USING YOUR MONITOR
1051 313815855361 SCALER ASSY
1052 313815854661 POW+INVERTER ASSY
1053 313815853561 CONTROL ASSY
1085 823827712431 TFT-LCD MOD HSD150SXA1(HSD0)
1086 313818875651 FFC 50/90/50 61509
1087⚠313816874231 MAINS CORD
1088 313818872732 CORD SUB-D 15/1M8/15 SUB-D M/M
1090 313815855771 MAIN FRAME+ WIRE ASSY
1102⚠242208600266 FUSE 5X20 HT 2A 250V IEC B
1191 313815855501 FET POW ASSY
1192 313815855511 SCHOTTKT DIODE ASSY
1193 313815855521 DIODE ASSY
1203 242202518033 CON BM PAN H 15P F BU SUB-D Y
1302 243803100435 SOC IC V 8P F 2.54 DIL L

Various

0450 313815633861 CARTON-150S4F
0451 313815633921 CUSHION-R-150S4F
0452 313815633931 CUSHION-L-150S4F
0453 313815620612 P.E. BAG-ANTI-STAT.
0601 313811704751 E-D.F.U. ASSY(150S4F)

1052 313815854661POW+INVERTER ASSY

2051 202203100053 ELCAP GL 25V S 470U PM20 A
2052 202203100053 ELCAP GL 25V S 470U PM20 A
2053 203803513304 ELCAP RGA 25V S 1U PM20 A
2054 222278019763 CER2 0805 Y5V 16V 1U PM20 R
2055 222278019763 CER2 0805 Y5V 16V 1U PM20 R
2101 823827712561 CAP PP MKP 275V S 1N PM10 B
2102 203830100314 CAP MPP 275V S 220N PM10 B
2103 202055490139 CERSAF NSB 250V S 4N7 PM20 B
2104 202055490139 CERSAF NSB 250V S 4N7 PM20 B
2105 202203100077 ELCAP KM 450V S 82U PM20 B
2106 223858015641 CER2 0805 X7R 50V 22N PM10 R
2107 222291019856 CER2 0805 Y5V 25V 330N P8020 R
2108 225260108026 CER2 DC X7R 1KV S 1N PM10 A
2109 222278019763 CER2 0805 Y5V 16V 1U PM20 R
2112 203803513506 ELCAP RGA 50V S 22U PM20 A
2113 202055490158 CERSAF CD 250V S 2N2 PM20 B
2114 225260108026 CER2 DC X7R 1KV S 1N PM10 A
2115 823827712671 ELCAP LZ 25V S 10U PM20 B
2116 823827712671 ELCAP LZ 25V S 10U PM20 B
2117 225260108026 CER2 DC X7R 1KV S 1N PM10 A
2118 823827712521 ELCAP EB 10V S 820U PM20 B
2119 823827712521 ELCAP EB 10V S 820U PM20 B
2120 202203100068 ELCAP GL 25V S 470U PM20 B
2121 223886115399 CER1 0805 NP0 50V 39P PM5 R
2122 223858015645 CER2 0805 X7R 50V 47N PM10 R
2124 223891015649 CER2 0805 X7R 25V 1N PM10 R
2801 222278019763 CER2 0805 Y5V 16V 1U PM20 R
2802 222278019763 CER2 0805 Y5V 16V 1U PM20 R
2803 223878019858 CER2 0805 Y5V 16V 470N P8020 R
2804 222278019763 CER2 0805 Y5V 16V 1U PM20 R
2805 223891015649 CER2 0805 X7R 25V 1N PM10 R
2806 223858015632 CER2 0805 X7R 50V 4N7 PM10 R
2807 223858015625 CER2 0805 X7R 50V 1N5 PM10 R
2808 222258015649 CER2 0805 X7R 50V 1N PM10 R
2811 223858015645 CER2 0805 X7R 50V 47N PM10 R
2812 223886115471 CER1 0805 NP0 50V 470P PM5 R
2813 223858015635 CER2 0805 X7R 50V 8N2 PM10 R
2814 222258015649 CER2 0805 X7R 50V 1N PM10 R
2815 223858015645 CER2 0805 X7R 50V 47N PM10 R
2816 202203100068 ELCAP GL 25V S 470U PM20 B
2820 823827712601 HV CERAMIC CAP 33P/3KV
2821 823827712601 HV CERAMIC CAP 33P/3KV
2822 823827712611 HV CERAMIC CAP 10P/3KV
2823 223858015635 CER2 0805 X7R 50V 8N2 PM10 R
2825 222278019763 CER2 0805 Y5V 16V 1U PM20 R
2826 223878019858 CER2 0805 Y5V 16V 470N P8020 R
2827 222278119867 CER2 1206 Y5V 16V 2U2 P8020 R
2828 222278119867 CER2 1206 Y5V 16V 2U2 P8020 R
2829 823827712611 HV CERAMIC CAP 10P/3KV



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3102 232271161824 RST SM 1206 RC01 820K PM5 R
3103 232271161824 RST SM 1206 RC01 820K PM5 R
3104 232271161274 RST SM 1206 RC01 270K PM5 R
3105 232273461002 RST SM 0805 RC12H 1K PM1 R
3106 212211000298 RST MFLM MF1/2WS A 1R PM1 A
3107 212211000315 RST MFLM MF1/2WS A 10R PM1 A
3108 213810113471 RST CRB CFR-12 A 470R PM5 A
3109 319802152230 RST SM 0805 22K PM5 COL R
3110 319802151030 RST SM 0805 10K PM5 COL R
3111 232273463603 RST SM 0805 RC12H 36K PM1 R
3112 319802152240 RST SM 0805 220K PM5 COL R
3113 319802153330 RST SM 0805 33K PM5 COL R
3114 319802154720 RST SM 0805 4K7 PM5 COL R
3115 232271161472 RST SM 1206 RC01 4K7 PM5 R
3116 212211000418 RST MFLM MF1/2WS A 220K PM1 A
3117 212211000452 RST MFLM MF1/2WS A 0R82 PM1 A
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3119 212211000452 RST MFLM MF1/2WS A 0R82 PM1 A
3120 212211000418 RST MFLM MF1/2WS A 220K PM1 A
3121 212211000315 RST MFLM MF1/2WS A 10R PM1 A
3123 212211000311 RST MFLM MF1/2WS A 4R7 PM1 A
3125 212211000354 RST MFLM MF1/2WS A 820R PM1 A
3126 232273466802 RST SM 0805 RC12H 6K8 PM1 R
3128 232273467501 RST SM 0805 RC12H 750R PM1 R
3129 319802151530 RST SM 0805 15K PM5 COL R
3131 232273462203 RST SM 0805 RC12H 22K PM1 R
3133 213810113683 RST CRB CFR-12 A 68K PM5 A
3134 319802154730 RST SM 0805 47K PM5 COL R
3135 232273061511 RST SM 0805 RC11 510R PM5 R
3802 213811273223 RST CRB CFR-25 A 22K PM5 A
3804 232273461003 RST SM 0805 RC12H 10K PM1 R
3805 319802151030 RST SM 0805 10K PM5 COL R
3807 319802152290 RST SM 0805 22R PM5 COL R
3810 319802151030 RST SM 0805 10K PM5 COL R
3811 319802151540 RST SM 0805 150K PM5 COL R
3813 319802151050 RST SM 0805 1M PM5 COL R
3814 213811273563 RST CRB CFR-25 A 56K PM5 A
3817 212211000425 RST MFLM MF1/2WS A 390K PM1
3818 232273061303 RST SM 0805 RC11 30K PM5 R
3819 232273061512 RST SM 0805 RC11 5K1 PM5 R
3821 232273061512 RST SM 0805 RC11 5K1 PM5 R
3822 823827712591 SHIP RESISTOR RZC50 3M
3823 232273461802 RST SM 0805 RC12H 1K8 PM1 R
3824 232273463601 RST SM 0805 RC12H 360R PM1 R
3825 319802151040 RST SM 0805 1K PM5 COL R
3827 232273061512 RST SM 0805 RC11 5K1 PM5 R
3828 319802151020 RST SM 0805 1K PM5 COL R
3829 319802153310 RST SM 0805 330R PM5 COL R
3830 823827712591 SHIP RESISTOR RZC50 3M

5051 313810874951 CHOKE COIL 5.0UH PM10
5052 313810874951 CHOKE COIL 5.0UH PM10
5101 313818870151 LINE FILTER 9MH
5102 242254942026 IND FXD BEAD EMI 1MHZ 50R A
5103 823827712631 POWER TRANSFORMER (EFD25)
5105 313816874511 FERRITE BEAD
5801 313818875921 TRANSFOMRMER 1076

6101 932216289683 DIO REC PG208 A (PAJI) R
6102 932216289683 DIO REC PG208 A (PAJI) R
6103 932216289683 DIO REC PG208 A (PAJI) R
6104 932216289683 DIO REC PG208 A (PAJI) R
6105 933952580685 DIO SIG SM BAV103 (TEG0) R
6106 934038700115 DIO REG SM BZX284-C12 (PHSE) R
6107 319801010010 DIO SIG 1N4148 (COL) A
6110 934038640115 DIO REG SM BZX284-C6V8 (PHSE)R
6111 933723420133 DIO REC BYD33J A (PHSE) A
6112 932214337687 DIO REC FCH20A15 (NIEC) L
6113 932219202687 DIO REC STPS10L45CFP (ST) L
6114 934038720115 DIO REG SM BZX284-C15 (PHSE) R
6115 932219207683 DIO REC 2EZ10 A (PAJI) R
6802 319801055680 DIO REG BZX79-B5V6 A COL A
6803 319801055680 DIO REG BZX79-B5V6 A COL A
6804 319801010620 DIO SIG SM BAV99 (COL) R
6805 319801010620 DIO SIG SM BAV99 (COL) R
6806 319801010620 DIO SIG SM BAV99 (COL) R
6807 319801055680 DIO REG BZX79-B5V6 A COL A
6808 319801010010 DIO SIG 1N4148 (COL) A

7101 935270037112 IC TEA1533AP/N1 (PHSE) L
7102 932215101687 FET POW STP6NC60FP (ST) L
7103 933179600126 TRA SIG BC337-40 (PHSE) A
7104 932214014667 OPT CP TCET1103(G) (VISH) L
7106 933771100686 IC TL431CLP S (MOTA) R
7107 933967310685 TRA SIG SM BC848C (ONSE) R
7108 933967310685 TRA SIG SM BC848C (ONSE) R
7110 933826850126 THYRIS BT169B (PHSE) A
7801 823827712661 IC OZ960G
7804 823827712651 TRANSISTOR SI4532ADY
7805 823827712651 TRANSISTOR SI4532ADY
7806 934044130115 TRA SIG SM PDTA144EU (PHSE) R
7807 933864360215 TRA SIG SM MMBT3904 (PHSE) R
7808 933864360215 TRA SIG SM MMBT3904 (PHSE) R

1051 SCALER PCB ASSY

2210 223878615649 CER2 0603 X7R 16V 1N PM10 R
2218 223886715339 CER1 0603 NP0 50V 33P PM5 R
2219 223886715221 CER1 0603 NP0 50V 220P PM5 R
2221 223878615649 CER2 0603 X7R 16V 1N PM10 R
2225 223878615649 CER2 0603 X7R 16V 1N PM10 R
2227 223878615649 CER2 0603 X7R 16V 1N PM10 R
2229 223878615649 CER2 0603 X7R 16V 1N PM10 R
2233 223878615649 CER2 0603 X7R 16V 1N PM10 R
2234 223878615649 CER2 0603 X7R 16V 1N PM10 R
2304 223878615649 CER2 0603 X7R 16V 1N PM10 R
2313 223878615649 CER2 0603 X7R 16V 1N PM10 R
2401 223878615649 CER2 0603 X7R 16V 1N PM10 R
2402 223878615649 CER2 0603 X7R 16V 1N PM10 R
2403 223878615649 CER2 0603 X7R 16V 1N PM10 R
2404 223878615649 CER2 0603 X7R 16V 1N PM10 R
2405 223878615649 CER2 0603 X7R 16V 1N PM10 R
2406 223878615649 CER2 0603 X7R 16V 1N PM10 R
2407 223878615649 CER2 0603 X7R 16V 1N PM10 R
2408 223878615649 CER2 0603 X7R 16V 1N PM10 R
2409 223878615649 CER2 0603 X7R 16V 1N PM10 R
2410 223878615649 CER2 0603 X7R 16V 1N PM10 R
2411 223878615649 CER2 0603 X7R 16V 1N PM10 R
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2414 223878615649 CER2 0603 X7R 16V 1N PM10 R
2415 223878615649 CER2 0603 X7R 16V 1N PM10 R
2416 223878615649 CER2 0603 X7R 16V 1N PM10 R
2417 223878615649 CER2 0603 X7R 16V 1N PM10 R
2418 223886715478 CER1 0603 NP0 50V 4P7 PM0P25 R
2419 223886715478 CER1 0603 NP0 50V 4P7 PM0P25 R
2420 223886715479 CER1 0603 NP0 50V 47P PM5 R
2421 223886715101 CER1 0603 NP0 50V 1P PM5 R
2422 223886715101 CER1 0603 NP0 50V 1P PM5 R
2423 223886715339 CER1 0603 NP0 50V 33P PM5 R
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2445 202001293721 ELCAP SM RV2 16V 10U PM20 R
2446 223878615649 CER2 0603 X7R 16V 1N PM10 R
2448 223878615649 CER2 0603 X7R 16V 1N PM10 R
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2450 223878615649 CER2 0603 X7R 16V 1N PM10 R
2451 223878615649 CER2 0603 X7R 16V 1N PM10 R
2452 222278019763 CER2 0805 Y5V 16V 1U PM20 R
2453 223878615649 CER2 0603 X7R 16V 1N PM10 R
2454 223878615649 CER2 0603 X7R 16V 1N PM10 R
2455 223878615649 CER2 0603 X7R 16V 1N PM10 R
2456 222224119876 CER2 1206 Y5V 10V 10U P8020 R
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2458 223878615649 CER2 0603 X7R 16V 1N PM10 R
2459 223878615649 CER2 0603 X7R 16V 1N PM10 R
2460 223886715101 CER1 0603 NP0 50V 1P PM5 R
2461 223878615649 CER2 0603 X7R 16V 1N PM10 R
2462 223878615649 CER2 0603 X7R 16V 1N PM10 R
2463 222224119876 CER2 1206 Y5V 10V 10U P8020 R
2464 223878615649 CER2 0603 X7R 16V 1N PM10 R
2465 223878615649 CER2 0603 X7R 16V 1N PM10 R
2466 223878615649 CER2 0603 X7R 16V 1N PM10 R
2467 223878615649 CER2 0603 X7R 16V 1N PM10 R
2468 222224119876 CER2 1206 Y5V 10V 10U P8020 R
2469 223878615649 CER2 0603 X7R 16V 1N PM10 R
2477 202001293721 ELCAP SM RV2 16V 10U PM20 R
2478 202001293721 ELCAP SM RV2 16V 10U PM20 R
2479 202001293782 ELCAP SM RV2 25V 10U PM20 R
2482 222224119876 CER2 1206 Y5V 10V 10U P8020 R
2483 222224119876 CER2 1206 Y5V 10V 10U P8020 R
2484 223886715339 CER1 0603 NP0 50V 33P PM5 R
2501 223878615649 CER2 0603 X7R 16V 1N PM10 R
2502 223878615649 CER2 0603 X7R 16V 1N PM10 R
2505 223878615649 CER2 0603 X7R 16V 1N PM10 R
2506 223878615649 CER2 0603 X7R 16V 1N PM10 R
2509 223858615636 CER2 0603 X7R 50V 10N PM10 R
2513 223878615649 CER2 0603 X7R 16V 1N PM10 R
2516 223858615623 CER2 0603 X7R 50V 1N PM10 R
2518 223858615623 CER2 0603 X7R 50V 1N PM10 R
2520 223858615623 CER2 0603 X7R 50V 1N PM10 R

Spare Parts List

2522 223858615623 CER2 0603 X7R 50V 1N PM10 R
2524 223858615623 CER2 0603 X7R 50V 1N PM10 R
2526 223858615623 CER2 0603 X7R 50V 1N PM10 R
2528 223858615623 CER2 0603 X7R 50V 1N PM10 R
2530 223858615623 CER2 0603 X7R 50V 1N PM10 R
2532 223858615623 CER2 0603 X7R 50V 1N PM10 R
2534 202001293747 ELCAP SM RV2 25V 47U PM20 R
2536 202001293747 ELCAP SM RV2 25V 47U PM20 R

3216 319802131010 RST SM 0603 1R PM5 COL
3217 319802131010 RST SM 0603 1R PM5 COL
3221 319802131030 RST SM 0603 10K PM5 COL
3222 319802131030 RST SM 0603 10K PM5 COL
3223 319802131010 RST SM 0603 1R PM5 COL
3224 319802131010 RST SM 0603 1R PM5 COL
3225 319802131010 RST SM 0603 1R PM5 COL
3226 319802131010 RST SM 0603 1R PM5 COL
3227 319802132220 RST SM 0603 2K2 PM5 COL
3228 319802132220 RST SM 0603 2K2 PM5 COL
3229 319802134730 RST SM 0603 47K PM5 COL
3230 319802131030 RST SM 0603 10K PM5 COL
3231 319802131090 RST SM 0603 10R PM5 COL
3232 319802131010 RST SM 0603 1R PM5 COL
3233 232273467509 RST SM 0805 RC12H 75R PM1 R
3234 319802131010 RST SM 0603 1R PM5 COL
3235 232273467509 RST SM 0805 RC12H 75R PM1 R
3236 319802131010 RST SM 0603 1R PM5 COL
3237 232273467509 RST SM 0805 RC12H 75R PM1 R
3242 319802134790 RST SM 0603 47R PM5 COL
3301 319802131030 RST SM 0603 10K PM5 COL
3302 319802131030 RST SM 0603 10K PM5 COL
3303 319802131030 RST SM 0603 10K PM5 COL
3304 319802131030 RST SM 0603 10K PM5 COL
3305 319802131030 RST SM 0603 10K PM5 COL
3306 319802134720 RST SM 0603 4K7 PM5 COL
3307 319802134720 RST SM 0603 4K7 PM5 COL
3308 319802131010 RST SM 0603 1R PM5 COL
3309 319802131010 RST SM 0603 1R PM5 COL
3310 319802131030 RST SM 0603 10K PM5 COL
3311 319802131030 RST SM 0603 10K PM5 COL
3312 319802131030 RST SM 0603 10K PM5 COL
3313 319802131030 RST SM 0603 10K PM5 COL
3314 319802131030 RST SM 0603 10K PM5 COL
3319 319802131030 RST SM 0603 10K PM5 COL
3401 319802131010 RST SM 0603 1R PM5 COL
3402 319802131010 RST SM 0603 1R PM5 COL
3403 319802131010 RST SM 0603 1R PM5 COL
3404 319802131010 RST SM 0603 1R PM5 COL
3405 319802131010 RST SM 0603 1R PM5 COL
3406 319802190030 RST SM 0603 JUMP. 0R05 COL
3407 319802131030 RST SM 0603 10K PM5 COL
3408 319802131030 RST SM 0603 10K PM5 COL
3409 319802134790 RST SM 0603 47R PM5 COL
3410 319802134790 RST SM 0603 47R PM5 COL
3414 319802131030 RST SM 0603 10K PM5 COL
3415 319802131040 RST SM 0603 1K PM5 COL
3417 319802132210 RST SM 0603 220R PM5 COL
3419 232270461002 RST SM 0603 RC22H 1K PM1 R
3420 319802190030 RST SM 0603 JUMP. 0R05 COL
3421 319802190030 RST SM 0603 JUMP. 0R05 COL
3422 319802132290 RST SM 0603 22R PM5 COL
3487 232271191032 RST SM 1206 JUMP. MAX 0R05 R
3488 232271161478 RST SM 1206 RC01 4R7 PM5 R
3489 232271161478 RST SM 1206 RC01 4R7 PM5 R
3490 232271161478 RST SM 1206 RC01 4R7 PM5 R
3491 232271161478 RST SM 1206 RC01 4R7 PM5 R
3501 319802131010 RST SM 0603 1R PM5 COL
3502 319802131010 RST SM 0603 1R PM5 COL
3503 319802131010 RST SM 0603 1R PM5 COL
3504 319802131010 RST SM 0603 1R PM5 COL
3505 319802131010 RST SM 0603 1R PM5 COL
3506 319802131010 RST SM 0603 1R PM5 COL
3507 319802131010 RST SM 0603 1R PM5 COL
3508 319802132210 RST SM 0603 220R PM5 COL
3509 319802132210 RST SM 0603 220R PM5 COL
3512 319802131030 RST SM 0603 10K PM5 COL
3514 319802131040 RST SM 0603 1K PM5 COL
3527 319802131030 RST SM 0603 10K PM5 COL
3528 319802131030 RST SM 0603 10K PM5 COL
3529 319802190030 RST SM 0603 JUMP. 0R05 COL
3531 235003510103 RST NETW SM ARV24 4X 10K PM5
3532 235003510103 RST NETW SM ARV24 4X 10K Pm5
3533 319802131030 RST SM 0603 10K PM5 COL
3535 319802131030 RST SM 0603 10K PM5 COL
3536 319802131040 RST SM 0603 1K PM5 COL
3537 319802133320 RST SM 0603 3K3 PM5 COL
3841 319802190020 RST SM 0805 JUMP. 0R05 COL R
3842 319802190020 RST SM 0805 JUMP. 0R05 COL R
3843 319802190020 RST SM 0805 JUMP. 0R05 COL R
3844 319802190020 RST SM 0805 JUMP. 0R05 COL R

5202 313816874261 TI321611G8-SMD
5302 313816874261 TI321611G8-SMD
5440 313816874261 TI321611G8-SMD
5441 313816874261 TI321611G8-SMD
5444 313816874261 TI321611G8-SMD
5445 313816874261 TI321611G8-SMD
5446 313816874261 TI321611G8-SMD
5449 313816874261 TI321611G8-SMD
5450 313816874261 TI321611G8-SMD
5501 313816874261 TI321611G8-SMD
5503 313816874261 TI321611G8-SMD

6220 932217973668 DIO REC SM BAT42W (PAJI) R
6221 933913910115 DIO SIG SM BAS32L (PHSE) R
6401 933913910115 DIO SIG SM BAS32L (PHSE) R

7202 932214526668 IC SM M24C02-WMN6 (ST) R
7211 935260739118 IC SM 74LVC14APW (PHSE) R
7301 932217946682 IC SM M29W010B-90K1 (ST) L
7302 932214725682 IC M24C16-WBN6 (ST) L
7442 932218206685 IC SM IRU1206-25CY (INR0) R
7443 823827712691 GM2116AA
7501 933967380685 TRA SIG SM BC858C (ONSE) R
7502 933967380685 TRA SIG SM BC858C (ONSE) R
7505 932209265685 TRA SIG SM MUN2211J (ONSE) R
7506 932216638668 FET POW SM SI5441DC (VISH) R
7509 932209265685 TRA SIG SM MUN2211J (ONSE) R
7510 932216638668 FET POW SM SI5441DC (VISH) R

1053 313815853561 Control Board

6711 932214603682 LED L-3WYGW

PHILIPS

PHILIPS - 150S4
GENERAL PRODUCT
SPECIFICATION

. ANALOG SIGNAL INPUT

. AUTO PICTURE ADJUSTMENT

. 14 FACTORY PRESET MODES AND 15 USER MODES WHICH CAN BE RECOVERED TO PRESET MODES

. USER FRIENDLY OSD DISPLAY FOR MODE IDENTIFICATION /ADJUSTMENT

. DDC2B COMMUNICATION CAPABILITY

. MAX. RESOLUTION 1024 x 768 NON-INTERLACED AT 75 HZ

. 15" COLOR TFT LCD FLAT PANEL

. EASY TILT & FODABLE BASE

. FULL RANGE POWER SUPPLY 90 - 264 VAC

. CE ENVIRONMENTAL POLICY

. ANTI-GLARE TO REDUCE LIGHT REFLECTION

. POWER MANAGEMENT CAPABILITY

. SOG SYNC SUPPORT

. TCO 99

. PROTECTIVE COVER (Option)

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PHILIPS

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CLASS NO.	15"TFT XGA LCD CMTR TYPE : 150S4FG/00C BRAND : PHILIPS		8639 000 13701				
2002-10-28							
NAME H.P.WU	SUPERS.	20	590 — 2	10		A4	
TY / CHECK	DATE 2002-10-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.					

PHILIPS

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7.1 Mean time between failures

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8.1 Acceptance test
9.0 Serviceability

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GENERAL PRODUCT SPECIFICATION

PHILIPS

1.0 FOREWORD

This specification describes a 15 XGA multi-scan color TFT
LCD monitor with maximum resolution up to 1024x768/75Hz non-interlaced.

2.0 PRODUCT PROFILE

HUDSON 15 TFT LCD flat panel monitor
Analog interface
Integrated tilt and foldable base

2.1 LCD

Type NR.	: LG panel LS150X05-A3
Dimensions	: 326.0(H)*254.0(V)*11.5(D) mm
Pitch (mm)	: 0.297 x 0.297 mm
Color pixel arrangement	: RGB stripe arrangement
Display surface	: Antiglare with hard coating(3H)
Number of color	: 6 bits, 16,777,216 colors
Backlight	: CCFL edge-light system
Active area(W x H)	: 304.1 x 228.1mm (15.0 Diagonal)
Viewing angle(CR≧10)	: Vertical 9095 degree, Horizontal 120115 degree typical.
Contrast ratio	: 350 typical.
Luminance of white	: 250200 Nits typical

Type NR.	: CPT panel CLAA150XG08
Dimensions	: 326.0(H)*251.0(V)*12.0(D) mm
Pitch (mm)	: 0.297 x 0.297 mm
Color pixel arrangement	: RGB stripe arrangement
Display surface	: Antiglare with hard coating(3H)
Number of color	: 6 bits, 16,777,216 colors
Backlight	: CCFL edge-light system
Active area(W x H)	: 304.1 x 228.1mm (15.0 Diagonal)
Viewing angle(CR≧10)	: Vertical 10095 degree, Horizontal 120115 degree typical.
Contrast ratio	: 350 typical.
Luminance of white	: 250200 Nits typical

Type NR.	: HannStar panel HSD150SXA1-A
Dimensions	: 321.0(H)*249.0(V)*10.2(D) mm
Pitch (mm)	: 0.297 x 0.297 mm
Color pixel arrangement	: RGB stripe arrangement
Display surface	: Anti-glare with hard coating(3H)
Number of color	: 6 bits, 16,777,216 colors
Backlight	: CCFL edge-light system
Active area(W x H)	: 304.1 x 228.1mm (15.0 Diagonal)
Viewing angle(CR≧10)	: Vertical 10595 degree, Horizontal 130115 degree typical.
Contrast ratio	: 400 typical..
Luminance of white	: 250 Nits typical

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2.2	Scanning frequencies	Hor.: 30 61KHz Ver.: 56 76 Hz
2.3	Video dot rate	: <79 MHz
2.4	Power input	: 90 264 Vac, 50/60 3 Hz
2.5	Power consumption	: < 2327 W typ.(with audio), (17W without audio) : AC input power < 2W at 230V < 1W at 120V when DC switch is off.
2.6	Dimensions	: 386W 343W x 310H x 170180D (Incl. Pedestal)
2.7	Weight	: 3.7Kg

2.8 Function:
Signal input:
Analog R/G/B separate inputs,
H/V sync separated,
Composite (H+V) TTL level,
SOG sync

2.9 Ambient temperature: 5 40 C

2.10 Safety and EMI requirements

Safety requirement: CCIB/CCEE (China), CE (Europe), CSA (Canada), IEC60950 CB Report, NOMNYCE (Mexico), PSB (Singapore), SEMKO (Nordic), TUV (Germany), UL (USA) GOST (Russia), B-MARK (Poland), DEMKO (Nordic), FIMKO (Nordic), SISIR, CPA (Singapore), EZU (Czech)

EMI requirement: BSMI (Taiwan), C-tick (Australia), CE (Europe), FCC (USA), IC (Canada), VCCI (Japan)

Ergonomic Requirement: ISO13406-2, TUV/GS
TCO99, MPRII (Sweden), Nutek (Sweden)

Power management: EPA, Nutek, E2000.

Environmental & Low Emission: MPRII, TCO99

3.0 Electrical characteristics

Compatibility: PC2001, Windows 2000, Windows98/Me, Windows XP, NSTL

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GENERAL PRODUCT SPECIFICATION

PHILIPS

3.1 Interface signals

3.1.1 Video

Input signal: Video, H-sync, V-sync
Video: 0.7 Vp-p, input impedance, 75 ohm
Sync. : Separate sync TTL level. Input impedance 5k6 ohm
Hor. Sync Positive/Negative
Ver. Sync Positive/Negative

3.1.2 Interface Cable

D-Sub Cable pin assignment:

PIN No.	SIGNAL
1	Red
2	Green/SOG
3	Blue
4	Sense (GND)
5	Test (GND)
6	Red GND
7	Green GND
8	Blue GND
9	+5V
10	Sync GND
11	Sense (GND)
12	Serial data (SDA)
13	H/H+V sync
14	V-sync
15	Data clock (SCL)

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3.2 OSD (On Screen Display) function
Adjustable functions:

MAIN CONTROLS
LANGUAGE
ADJUST POSITION
BRIGHTNESS & CONTRAST
VIDEO NOISE
ADJUST COLOR
OSD SETTINGS
PRODUCT INFORMATION
RESET TO FACTORY SETTINGS
INPUT SELECTION
EXIT MAIN CONTROLS
MOVE SELECTION THEN ok

LANGUAGE: ENGLISH, ESPANOL, FRANCAIS, DEUTSCH, ITALIANO, S.CHINESE

ADJUST POSITION: HORIZONTAL
VERTICAL

BRIGHTNESS & CONTRAST: Brightness and Contrast adjustment.

VIDEO NOISE: Phase adjustment, Clock adjustment
ADJUST COLOR: Original panel color, 9300K for general use,
6500k for image management,
User red green blue adjustable
OSD POSITION: OSD H-position, OSD V-position
PRODUCT INFORMATION: show the product information
RESET TO FACTORY SETTING: recall to Factory preset settings.

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GENERAL PRODUCT SPECIFICATION

PHILIPS

3.3 Timing requirement

3.3.1 Mode storing capacity

(1) Factory preset modes : 14
(2) User modes : 15

3.3.2 Factory preset timings

MODE NO.	1	2	3	4
RESOLUTION	640 x 350	720 x 400	640 x 480	640x480
Dot clock (MHz)	25.175	28.321	25.175	30.240
f h	31.469kHz	31.469kHz	31.469kHz	35.0kHz
A (us)	31.78(800 dots)	31.78(900dots)	31.778 (800 dots)	28.571(864 dots)
B (us)	3.813(96 dots)	3.813(108dots)	3.813 (96 dots)	2.116(64 dots)
C (us)	1.907(48 dots)	1.907(54dots)	1.907 (48 dots)	3.175(96 dots)
D (us)	25.42(640 dots)	25.42(720dots)	25.422 (640 dots)	21.164(640 dots)
E (us)	0.636(16 dots)	0.636(18dots)	0.636 (16 dots)	2.116(64 dots)
f v	70Hz(70.09)	70Hz(70.087)	60Hz (59.940)	66.7 Hz(66.667)
O (ms)	14.27(449 lines)	14.27(449 lines)	16.683 (525 lines)	15.000(525 lines)
P (ms)	0.064(2 lines)	0.064(2 lines)	0.064 (2 lines)	0.086(3 lines)
Q (ms)	1.907(60 lines)	1.112(35 lines)	1.049 (33 lines)	1.114(39 lines)
R (ms)	11.12(350 lines)	12.71(400 lines)	15.253 (480 lines)	13.714(480 lines)
S (ms)	1.179(37 lines)	0.384(12 lines)	0.317 (10 lines)	0.086(3 lines)
SYNC. H/V POLARITY	+/-	-/+	- / -	+/+ Or -/-
SEP . SYNC	Y	Y	Y	Y

A : H-Total
B : H- Sync width
C : H- Back porch
D : H- Video width
E : H- Front porch

O : V-Total
P : V- Sync width
Q :.V- Back porch
R : V- Video width
S :.V- Front porch

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MODE NO.	5	6	7	8
RESOLUTION	640 x 480	640 x 480	800 x 600	800 x 600
Dot clock(MHz)	31.500	31.500	36.000	40.000
f h	37.861kHz	37.500kHz	35.156kHz	37.879kHz
A (us)	26.413(832 dots)	26.667 (840 dots)	28.44 (1024 dots)	26.40 (1056 dots)
B (us)	1.270(40 dots)	2.032 (64 dots)	2.000 (72 dots)	3.200 (128 dots)
C (us)	4.064(128 dots)	3.810 (120 dots)	3.556 (128 dots)	2.200 (88 dots)
D (us)	20.317(640 dots)	20.317 (640 dots)	22.22 (800 dots)	20.00 (800 dots)
E (us)	0.762(24 dots)	0.508 (16 dots)	0.667 (24 dots)	1.000 (40 dots)
f v	72.809Hz	75Hz (75)	56Hz (56.25)	60Hz (60.316)
O (ms)	13.735(520 lines)	13.333 (500 lines)	17.78 (625 lines)	16.58 (628 lines)
P (ms)	0.079(3 lines)	0.080 (3 lines)	0.057 (2 lines)	0.106 (4 lines)
Q (ms)	0.739(28 lines)	0.427 (16 lines)	0.626 (22 lines)	0.607 (23 lines)
R (ms)	12.678(480 lines)	12.80 (480 lines)	17.07 (600 lines)	15.84 (600 lines)
S (ms)	0.237(9 lines)	0.027 (1 line)	0.028 (1 line)	0.026 (1 line)
SYNC. H/V POLARITY	-/-	- / -	+ / +	+ / +
SEP . SYNC	Y	Y	Y	Y

MODE NO.	9	10	11	12
RESOLUTION	800 x 600	800 x 600	832 x 624	1024 x 768
Dot clock(MHz)	50.000	49.500	57.280	65.000
f h	48.077kHz	46.875kHz	49.722kHz	48.363kHz
A (us)	20.80 (1040dots)	21.333 (1056dots)	20.11 (1152dots)	20.677(1344 dots)
B (us)	2.400 (120 dots)	1.616 (80 dots)	1.117 (64 dots)	2.092(136 dots)
C (us)	1.280 (64 dots)	3.232 (160 dots)	3.911 (224 dots)	2.462(160 dots)
D (us)	16.00 (800 dots)	16.162 (800 dots)	14.52 (832 dots)	15.754(1024 dots)
E (us)	1.120 (56 dots)	0.323 (16 dots)	0.559 (32 dots)	0.369(24 dots)
f v	72Hz (72.188)	75Hz (75.000)	75Hz (74.546)	60.004Hz
O (ms)	13.85 (666 lines)	13.333 (625lines)	13.41 (667 lines)	16.666(806 lines)
P (ms)	0.125 (6 lines)	0.064 (3 lines)	0.060 (3 lines)	0.124(6 lines)
Q (ms)	0.478 (23 lines)	0.448 (21 lines)	0.784 (39 lines)	0.600(29 lines)
R (ms)	12.48 (600 lines)	12.80 (600lines)	12.55 (624 lines)	15.880(768 lines)
S (ms)	0.770 (37 line)	0.021 (1 line)	0.020 (1 lines)	0.062(3 lines)
SYNC. H/V POLARITY	+ / +	+ / +	- / -	-/-
SEP . SYNC	Y	Y	Y	Y

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CLASS NO.

15"TFT XGA LCD CMTR

TYPE : 150S4FG/00C

BRAND : PHILIPS

8639 000 13701

2002-10-28

NAME H.P.WU | SUPERS. | 20 | 590 — 9 | 10 | A4

TY | CHECK | DATE 2002-10-28 | Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.

GENERAL PRODUCT SPECIFICATION

MODE NO.	13	14
RESOLUTION	1024 x 768	1024 x 768
Dot clock(MHz)	75.000	78.750
f h	56.476kHz	60.023kHz
A (us)	17.707(1328 dots)	16.66 (1312dots)
B (us)	1.813(136 dots)	1.219 (96 dots)
C (us)	1.920(144 dots)	2.235 (176 dots)
D (us)	13.653(1024 dots)	13.003 (1024dots)
E (us)	0.320(24 dots)	0.203 (16 dots)
f v	70.069Hz	75Hz (75.029)
O (ms)	14.272(806 lines)	13.328 (800 lines)
P (ms)	0.106(6 lines)	0.050 (3 lines)
Q (ms)	0.513(29 lines)	0.466 (28 lines)
R (ms)	13.599(768 lines)	12.795 (768 lines)
S (ms)	0.053(3 lines)	0.017 (1 line)
SYNC. H/V POLARITY	-/-	+/+
SEP . SYNC	Y	Y

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3.3.3 Horizontal scanning

Sync polarity : Positive or Negative
Scanning frequency : 30 - 61 KHz

3.3.4 Vertical scanning

Sync polarity : Positive or Negative
Scanning frequency : 56 - 76 Hz

3.4 Power input connection

Power cord length : 1.82.0 M
Power cord type : 3 leads power cord with protective earth plug.

3.5 Power management

The power consumption and the status indication of the set with power management function are as follows,

STATUS	Horizontal	Vertical	Power Spec	LED
On	Pulse	Pulse	as normal on	Green
Stand-by	No Pulse	Pulse	< 13 W	Amber
Suspend	Pulse	No Pulse	< 13 W	Amber
Off	No Pulse	No Pulse	< 513 W	Amber

3.6 Display identification

In accordance with DVI requirement, use DDC2B and EDID 3.0 structure 1.3.

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GENERAL PRODUCT SPECIFICATION

4.0 Visual characteristics

4.1 Test conditions

Unless otherwise specified, this specification is defined

under the following conditions.

(1) Input signal : As defined in 3.3, 1024 x 768/75Hz mode (60.023 Khz)

Signal sources must have 75 ohms output impedance.

(2) Luminance setting: Set contrast to 50 % and brightness to100 % with

full white pattern.

(3) Warm-up: more than 30 minutes after power on with signal supplied.

(4) Ambient light: 400 -- 600 lux.

(5) Ambient temperature: 25 5 C

4.2 Resolution

Mode	Resolution	H. freq. / V. freq	Standard
1.	640 x 350	31.469Khz/70.087Hz	VGA
2.	720 x 400	31.469Khz/70.087Hz	VGA
3.	640 x 480	31.469Khz/59.940Hz	VGA
4.	640 x 480	35.000Khz/66.667Hz	Macintosh
5.	640 x 480	37.861Khz/72.809Hz	VESA
6.	640 x 480	37.500Khz/75.000Hz	VESA
7.	800 x 600	35.156Khz/56.250Hz	VESA
8.	800 x 600	37.879Khz/60.317Hz	VESA
9.	800 x 600	48.077Khz/72.188Hz	VESA
10.	800 x 600	46.875Khz/75.000Hz	VESA
11.	832 x 624	49.700Khz/75.000Hz	Macintosh
12.	1024 x 768	48.363Khz/60.004Hz	VESA
13.	1024 x 768	56.476Khz/70.069Hz	VESA
14.	1024 x 768	60.023Khz/75.029Hz	VESA

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4.3 Brightness: 250 nits (typ.) at maximum contrast and maximum brightness
(At center of the screen, Fig. 1)

4.4 Image size

4.4.1 Actual display size
304.1 x 228.1mm

4.5 Brightness uniformity

Set contrast at 50% and turn the brightness to get above 200 nits.
at center of the screen
Apply the Fig 1, it should comply with the following formula:

$$\frac{\text{Minimum (B1, B2,.., B5)}}{\text{Maximum (B1, B2,.., B5)}} > 75\ \%$$

4.6 White color adjustment

There are two factory preset white color 9300K and 6500K.

Apply full white pattern, with brightness in 100 % position
and the contrast control at 50 %.
The 1931 CIE Chromaticity (color triangle) diagram (x, y)
coordinate for the screen center should be:

9300K CIE coordinates X = 0.283 0.020
Y = 0.297 0.020

6500K CIE coordinates X = 0.313 0.020
Y = 0.329 0.020

4.7 Monitors pixel defect

Refer to **Philips' Flat Panel Monitors Pixel Defect Policy**

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GENERAL PRODUCT SPECIFICATION

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5.0 Mechanical characteristics

5.1 Controls

Front: - DC power switch
-OSD function key

Rear: -Video signal cable
-Power cord socket
-DC 12V fly in

5.2 Unit dimension / Weight

Set dimension (incl. pedestal): 343W x 310H x 170D

Net weight: 3.1 Kg

5.3 Tilt and foldable base

Tilt angle: -5 to +25

Foldable angle: 90

5.4 Transportation packages

5.4.1 Shipping dimension/Weight

Carton dimension: 401W x 394H x 138D

Gross weight: 4.1Kg

5.4.2 Block unit / Palletization

layers/block	sets/layer	sets/block unit
15	6	90

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6.0 Environmental characteristics

The following sections define the interference and susceptibility condition limits that might occur between external environment and the display device.

6.1 Susceptibility of display to external environment

Operating

- Temperature : 5 to 40 degree C
- Humidity : 20% ~ 80%
- Altitude : 0-12,000 feet
- Air pressure : 600-1100 mBAR

Storage

- Temperature : -20 to 60 degree C
- Humidity : 5% ~ 95% (< 40℃)
- Altitude : 0-30,000 feet
- Air pressure : 300-1100 mBAR

Note: recommend at 5 to 35°C, Humidity less than 60 %

6.2 Transportation tests

Standard		Philips UAN-D1400	NSTA
Drop Test	Height	76.0 cm	76.0 cm
	Sequence	1 corner 3 faces (-10deg C x 16 hrs)	1 corner 3 edge (Room temp) 6 face
	Test Result	Electrical function ok Mechanical function ok No serious damage on set appearance (Room temp -10 C, humidity 70 %)	
Vibration Test	Sequence	(1) PACKAGING 5-200 Hz, 0.73 G, 30 min. for Each axis	
		(2) OPERATING 10-50-10 Hz, 0.35 mm, 30 min. for Each axis	
	Test Result	Electrical function ok Mechanical function ok No serious damage on set appearance	
Bump Test		For design evaluation only Operating 10 G, 11 msec, 1000 cycles Temperature : 23 C Humidity : 60 % Air pressure : 100 kpa (According to DSD draft standard UAN-D636)	

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6.3 Display disturbances from external environment
According to IEC 801-2 for ESD disturbances

6.4 Display disturbances to external environment

6.4.1 EMI
EMI: FCC, IC, VCCI, CE, C-Tick, MPRII, BSMI.

7.0 Reliability

7.1 Mean time between failures (MTBF)
System MTBF (Excluding the LCD panel and CCFL): 50,000 hrs
CCFL MTBF: 30,000 hrs

8.0 Quality assurance requirements

8.1 Acceptance test
According to MIL-STD-105D Control II level

AQL : 0.65 (major)
1.5 (minor)
(Please also refer to annual quality agreement)

9.0 Serviceability
The serviceability of this monitor should fulfill the requirements which are prescribed in UAW-0346 and must be checked with the check list UAT-0361.

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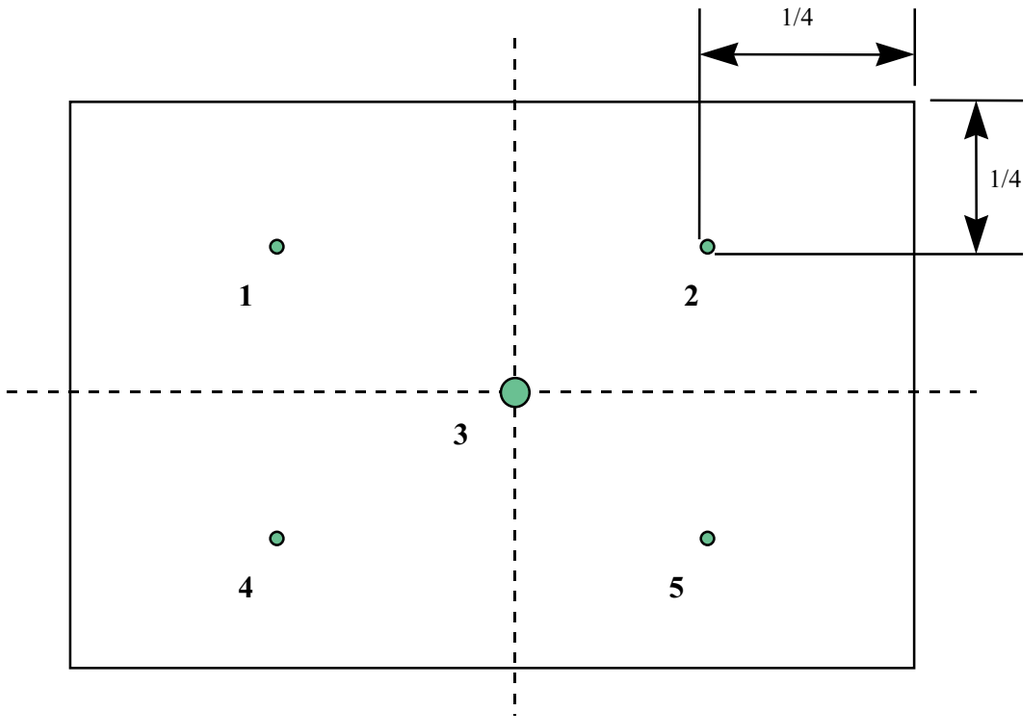
Fig 1: Brightness and Uniformity



Average: 5 points average

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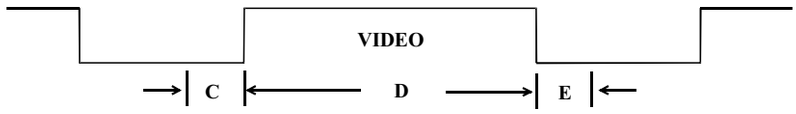
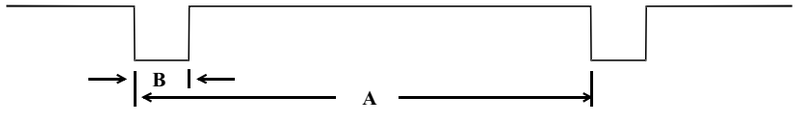
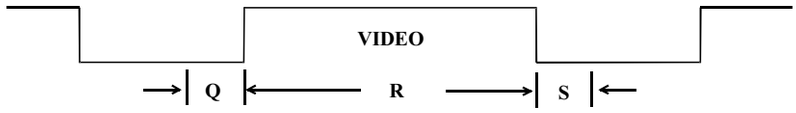
SEPARATE SYNC.

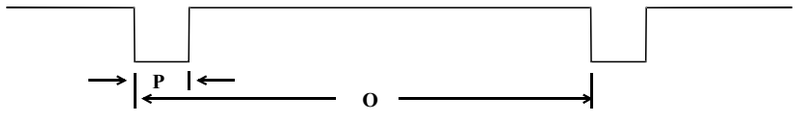


HORIZONTAL

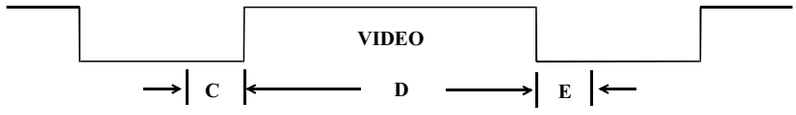




VERTICAL



COMPOSITE SYNC.



HORIZONTAL

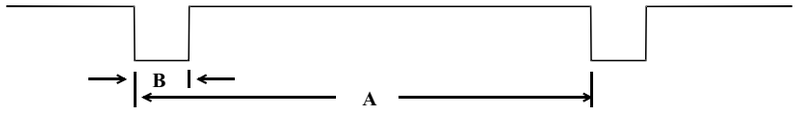


FIG-2 TIMING CHART -1

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CLASS NO.	15"TFT XGA LCD CMTR TYPE : 150S4FG/00C BRAND : PHILIPS		8639 000 13701				
2002-10-28							
NAME H.P.WU	SUPERS.	20	590 — 18	10		A4	
TY / CHECK	DATE 2002-10-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.					

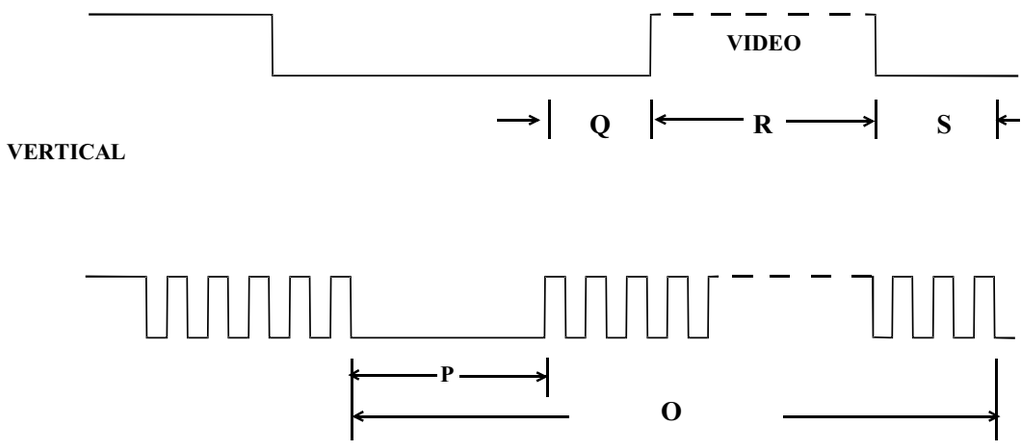

FIG-3 TIMING CHART -2

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CLASS NO.	15"TFT XGA LCD CMTR TYPE : 150S4FG/00C BRAND : PHILIPS	8639 000 13701
2002-10-28		
NAME H.P.WU	SUPERS. 20	590 — 19 10 A4
TY CHECK	DATE 2002-10-28	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.

GENERAL PRODUCT SPECIFICATION

PHILIPS

Philips Flat Panel Monitors Pixel Defect Policy

BRIGHT DOT DEFECTS	ACCEPTABLE LEVEL		
MODEL	150P	150B	150S
1 lit sub-pixel	0	0	8 or fewer
2 adjacent lit sub-pixels	0	0	3 or fewer
3 adjacent lit sub-pixels (one white pixel)	0	0	1 or fewer
Distance between two bright dot defects*	0	0	15mm or more
Bright dot defects within 20 mm circle	0	0	3 or fewer
Total bright dot defects of all type	0	0	8 or fewer

BLACK DOT DEFECTS	ACCEPTABLE LEVEL		
MODEL	150P	150B	150S
1 dark sub-pixel	4 or fewer	4 or fewer	8 or fewer
2 adjacent dark sub-pixels	1 or fewer	1 or fewer	3 or fewer
3 adjacent dark sub-pixels (one white pixel)	0	0	1 or fewer
Distance between two black dot defects*	15mm or more	15mm or more	15mm or more
Black dot defects within 20 mm circle*	3 or fewer	3 or fewer	3 or fewer
Total black dot defects of all type	4 or fewer	4 or fewer	8 or fewer

TOTAL DOT DEFECTS	ACCEPTABLE LEVEL		
MODEL	150P	150B	150S
Total bright or black dot defects of all type	4 or fewer	4 or fewer	10 or fewer

* 1 or 2 adjacent sub-pixel defects = 1 dot defect

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Difference parts list

Go to cover page

Item	12NC	Description	12NC	Description
	863900013701	150S4FG/00C	863900014017	150S4FB/00H
30	313815753841	BEZEL ASSY-150S4(T)	313815753911	BEZEL ASSY-150S4(B)
40	313815753811	BACK COVER ASSY-150S4	313815753921	BACK COVER ASSY-150S4(B)
96	313815407711	GUIDE DC OUT	313815408011	GUIDE DC OUT(BLK)
103	313815405212	PEDESTAL CAP(T)	313815405842	PEDESTAL CAP(B)
104	313815405373	VESA COVER(T)	313815405773	VESA COVER(B)
1087	313816874231	MAINS CORD	313812874931	MAINSCORD
1087	313818870461	MAINSCORD IEC 10A 1M8 DET TD	313818870471	MAINSCORD IEC 10A 1M8 DET BK
1088	313818872732	CORD SUB-D 15/1M8/15 SUB-D M/	313818872742	CORD SUB-D 15/1M8/15 SUB-D M/M
50	313815754631	FOLDABLE BASE(T)	313815754641	FOLDABLE BASE(B)
31	313815405713	BEZEL(T PC+ABS)	313815405753	BEZEL(B PC+ABS)
32	313815406162	BUTTON-POWER(T)	313815406172	BUTTON-POWERL(B)
33	313815406141	BUTTON-CONTROL(T)	313815406151	BUTTON-CONTROL(B)
41	313815407491	BACK COVER(T PC+ABS)	313815408041	BACK COVER(B PC+ABS)

Item	12NC	Description	12NC	Description
	863900013701	150S4FG/00C	863900014065	150B4CG/89H
30	313815753841	BEZEL ASSY-150S4(T)	313815754431	BEZEL ASSY-150B4(T)
40	313815753811	BACK COVER ASSY-150S4	313815753811	BACK COVER ASSY-150S4
98			313815550733	PLASTIC COVER
103	313815405212	PEDESTAL CAP(T)		
1087	313816874231	MAINS CORD	313818871651	MAINSCORD CCEE 10A 1M8 DET BK
1087	313818870461	MAINSCORD IEC 10A 1M8 DET TDS		
31	313815405713	BEZEL(T PC+ABS)	313815405713	BEZEL(T PC+ABS)
141	313815521611	QUICK SETUP GUIDE(150S4F)	313815521901	QUICK SETUP GUIDE-150B4C
142	313815521682	MANUAL-USING YOUR MONITOR		